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QUARRY ACCIDENTS IN THE UNITED STATES

DURING THE CALENDAR YEAR 1921

BY

WILLIAM W. ADAMS

WASHINGTON
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QUARRY ACCIDENTS IN THE UNITED STATES DURING THE CALENDAR YEAR 1921.

By William W. Adams.

INTRODUCTION.

In 1921 the quarry industry in the United States showed fewer fatal accidents to employees and slightly more nonfatal injuries than in 1920. According to reports from operating companies to the Bureau of Mines, the fatality rate declined from 2.31 per thousand employees in 1920 to 2 per thousand in 1921, and the injury rate rose from 145.51 to 174.54, these rates being based upon a standard of 300 working days per year.

Reports from 1,764 operators showed 77,185 employees, who worked 17,987,547 shifts, an average of 233 work days per man. As compared with 1920, these figures indicate an increase of 47 operating companies, a loss of 5,139,101 shifts, and a reduction of 34 workdays per man.

Operations inside the quarries showed 49,292 employees, 10,824,541 shifts, and 220 average days per man; work at crushers and rock-dressing plants showed 27,893 employees, 7,163,006 shifts, and 257 workdays per man. Each of these figures represents a reduction as compared with 1920.

Accidents during the year resulted in the death of 120 men and the injury of 10,465, as compared with 178 killed and 11,217 injured in 1920.

The accident rates for quarries producing stone for building or monumental work were 3.23 killed and 104.24 injured per thousand men employed, as compared with 1.22 killed and 152.37 injured in 1920; the rates for quarries where the stone is crushed were 3.40 killed and 230.51 injured per thousand employees, as compared with 2.66 killed and 213.19 injured in 1920. At the outside plants at the building-stone quarries the rates were 0.38 killed and 158.90 injured as compared with 0.95 killed and 126.30 injured; at crushers and cement mills the rates were 1.28 killed and 177.39 injured, as compared with 1.73 killed and 183.77 injured in 1920.

Of the 10,585 accidents at all quarries during the year, 1.13 per cent were fatal, 0.09 per cent resulted in permanent total disability,

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3.12 in permanent partial disability, 17.91 per cent in temporary disability of more than 14 days, and 77.75 per cent in disability not exceeding 14 days but more than the remainder of the shift on which the accident occurred.

Number of men employed, days' work performed, and number of men killed and injured at all quarries in the United States, 1911 to 1921.

Year.	Average days active.	Men employed.		Total shifts.	Number killed.		Number injured.	
		Actual number.	Equivalent in 300-day workers (calculated).		Total.	Per 1,000 300-day workers (calculated).	Total.	Per 1,000 300-day workers (calculated).
1911	228	110,954	84,417	25,325,094	188	2.23	5,390	63.85
1912	249	113,105	93,837	28,151,042	213	2.27	6,552	69.82
1913	246	106,278	87,141	26,142,237	183	2.10	7,739	88.81
1914	233	87,936	68,187	20,456,157	180	2.64	7,836	114.92
1915	246	100,740	82,447	24,734,224	148	1.80	9,671	117.30
Average for 5 years	240	103,803	83,206	24,961,750	182	2.19	7,437	89.39
1916	253	90,797	76,457	22,937,178	173	2.26	13,427	175.62
1917	261	82,290	71,525	21,457,357	131	1.83	13,242	185.14
1918	260	68,332	59,285	17,785,504	125	2.11	8,719	147.07
1919	253	75,505	63,794	19,138,308	123	1.93	9,199	144.20
1920	267	86,488	77,089	23,126,648	178	2.31	11,217	145.51
Average for 5 years	259	80,682	69,630	20,888,999	146	2.10	11,161	160.29
Average for 10 years	249	92,243	76,418	22,925,375	164	2.15	9,299	121.69
1921	233	77,185	59,958	17,987,547	120	2.00	10,465	174.54

ACKNOWLEDGMENTS.

The Bureau of Mines gladly acknowledges the hearty cooperation of quarry operators throughout the country whose voluntary reports of accidents at their properties furnish the basis of the statistical tables herein presented. The author acknowledges the assistance of Miss Lillian Chenoweth, of the Bureau of Mines, in the compilation of the figures.

SCOPE OF STATISTICS.

The tables in this paper have been compiled by the Bureau of Mines from reports received directly (except in California) from operators of quarries, and represent all stages of the quarrying industry. They are based on returns from 1,764 operators of producing quarries, or 47 more than in 1920. The number of men employed indicates a reduction of about 11 per cent and a loss of 22 per cent in the total number of shifts worked.

The Bureau of Mines is authorized to collect data relating to accidents at mines and quarries, but there is no Federal law compelling operators to render such data. The reports received from operators are voluntary responses to the bureau's requests for information.

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It is believed that the data presented herein, while possibly not complete for the entire industry, are thoroughly representative of the hazards to which the quarry workers are exposed.

CLASSIFICATION OF INJURIES.

Since 1915 the bureau's statistics of accidents at quarries have divided all injuries into five main classes as follows: 1, fatalities; 2, permanent total disabilities; 3, permanent partial disabilities; 4, temporary disabilities lasting more than 14 days; 5, temporary disabilities of more than the remainder of the shift on which the accident occurred but not to exceed 14 days.

During the 7 years covered by the table that follows, 76,938 accidents at quarries have been reported to the Bureau of Mines. Of these, 998 (1.30 per cent) resulted fatally, 101 (0.13 per cent) resulted in permanent total disability, 2,374 (3.09 per cent) in permanent partial disability, 12,692 (16.50 per cent) in disability of more than 14 days, and 60,773 (78.99 per cent) in disability of 1 to 14 days, inclusive. During this period more than 147,000,000 shifts were worked by all quarry employees, so that the volume of exposure to occupational hazards indicates that the foregoing distribution of accidents may be accepted as typical of the severity of accidents that occur to persons engaged in the industry.

Comparison of quarry accidents, 1915 to 1921.

Injury.	1915	1916	1917	1918	1919	1920	1921
1. Fatal	148	173	131	125	123	178	120
2. Serious (time lost more than 14 days):							
A. Permanent disability—							
Total [a]	16	26	10	7	23	10	9
Partial [b]	507	446	354	185	225	327	330
B. Others	1,365	2,194	2,266	1,466	1,612	1,893	1,896
3. Slight (time lost, 1 to 14 days, inclusive)	7,783	10,761	10,612	7,061	7,339	8,987	8,230
Total	9,819	13,600	13,373	8,844	9,322	11,395	10,585
Men employed	100,740	90,797	82,290	68,332	75,505	86,488	77,185

[a] *Permanent total disability.*—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating workman from doing any work of a gainful occupation.

[b] *Permanent partial disability.*—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

QUARRIES CLASSIFIED.

The quarries are classified according to the kind of rock, as follows: Cement rock, granite, limestone, marble, sandstone and bluestone, slate, and trap rock. Separate statistical tables are presented for each group and for all groups combined. The tables show the number of persons employed, the average number of working days per man, the total number of shifts worked by all employees, and the number of men killed or injured, thus making it possible to base fatality and injury rates throughout this report on a uniform number

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of days during which the workmen were exposed to the hazards of their occupations.

A summary of the more important figures for all quarries in the United States during the years 1921 and 1920 is given in Table 1. The causes of the accidents are shown in Tables 2, 4, 5, 29, and 30. The percentage of accidents due to any one cause is given in Table 19, and the accident rates, by causes, per thousand 300-day workers are shown in Table 20. Wherever possible, comparative figures for previous years are given.

TABLE 1.—*All quarries: Men employed and number killed and injured, by kind of quarry, during the years ended Dec. 31, 1921 and 1920.*

1921.

Kind of quarry.	Active operators.	Men employed.		Killed.		Injured.		Widows.	Orphans.
		Actual number.	Equivalent in 300-day workers (calculated).	Number.	Per 1,000 300-day workers	Number.	Per 1,000 300-day workers.		
Cement rock	70	10,815	10,459	20	1.91	2.233	213.50	10	19
Granite	297	9,479	7,010	18	2.57	940	134.09	10	22
Limestone	935	39,551	29,399	58	1.97	5,248	178.51	32	81
Marble	45	4,549	4,025	6	1.49	406	100.87	3	4
Sandstone and bluestone	194	3,928	2,394	3	1.25	374	156.22	2	6
Slate	80	3,564	2,848	4	1.40	385	135.18	2	1
Trap rock	143	5,299	3,823	11	2.88	879	229.92	6	12
Total, 1921	**1,764**	**77,185**	**59,958**	**120**	**2.00**	**10,465**	**174.54**	**65**	**145**

1920.

Cement rock	74	13,251	14,165	39	2.75	2,585	182.49	20	32
Granite	339	12,735	10,664	22	2.06	1,392	130.53	11	12
Limestone	925	43,151	37,182	96	2.58	5,321	143.11	50	72
Marble	42	4,438	4,349	4	.92	400	91.98	3	3
Sandstone and bluestone	163	4,466	3,540	2	.56	356	100.56	1	4
Slate	75	3,496	3,364	5	1.49	364	108.20	3	9
Trap rock	99	4,951	3,825	10	2.61	799	208.89	6	12
Total, 1920	**1,717**	**86,488**	**77,089**	**178**	**2.31**	**11,217**	**145.51**	**94**	**144**

GRANITE QUARRIES.

Granite quarries employed 9,479 men during 1921, or 3,256 men (26 per cent) less than in 1920. In the pits proper 7,105 men were employed, while 2,374 men worked at the outside rock-dressing plants. The total working time was 2,102,854 shifts, an average of 222 days per man or 29 days per man less than the year before.

Accidents resulted in the death of 18 men (4 less than in 1920) and the injury of 940 (452 less than in 1920). The accident rates per thousand 300-day workers were therefore 2.57 killed and 134.09 injured, as compared with 2.06 killed and 130.53 injured in the preceding year.

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The main causes of accidents inside the quarries were flying objects, handling rock, machinery, falls or slides of rock, and falling objects; the first cause named was responsible for one-third of all injuries to men in the pits. At the rock-dressing plants outside the quarries, nearly one-half of the injuries were due to flying objects, the others being due mainly to handling rock, hand tools, machinery, and falling objects.

Eight hours per day constituted the standard workday for 55.7 per cent of the men in the quarries, 9 hours for 16.8 per cent, and 10 hours for 16 per cent. At the outside plants 8 hours was the standard workday for 71.1 per cent of the men, 9 hours for 7.5 per cent, and 10 hours for 11.8 per cent.

LIMESTONE QUARRIES.

Limestone quarries constitute the largest branch of the quarry industry, usually employing about half of all quarry workers in the United States. Companies producing limestone in 1921 employed 39,551 men, 8 per cent less than in 1920. The total working time for all employees was 8,819,813 shifts, each man averaging 223 workdays during the year, a loss of 36 days per man from the year before.

Accidents to employees resulted in 58 deaths and 5,248 injuries, or 1.97 fatalities and 178.51 injuries per thousand 300-day workers, the former being smaller and the latter being larger than the corresponding rate for the preceding year.

Most of the injuries inside the quarries were caused by handling rock at face, flying objects, haulage, falls or slides of rock or overburden, machinery, falling objects, and falls of persons. At the outside plants the accidents resulted mainly from machinery, flying objects, falling objects, falls of persons, hand tools, and haulage. The distribution of the accidents is given in Table 2.

The operators' reports showed that 21.3 per cent of the men working inside the pits were employed 8 hours per day, 23.4 per cent 9 hours, and 43.8 per cent 10 hours. Of the employees at the outside plants, 9 per cent worked 8 hours per day, 22.5 per cent 9 hours, and 42.9 per cent 10 hours.

SANDSTONE AND BLUESTONE QUARRIES.

Quarries producing sandstone and bluestone employed 3,928 men, of whom 3,090 worked inside the pits; 838 worked at the outside plants where they were engaged in crushing or dressing the stone. The working time for all employees was equivalent to 718,310 shifts, an average of 183 days per man, or 55 workdays less than in 1920.

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Accidents resulted in the death of 3 men and the injury of 374, the resulting rates being 1.25 killed and 156.22 injured per 1,000 men employed (300-day workers). The corresponding rates for the preceding year were 0.56 killed and 100.56 injured. About 78 per cent of the accidents in 1921 occurred at quarries in New York, Ohio, and Pennsylvania; these three States employed 70 per cent of all employees engaged in producing sandstone and bluestone in the United States.

Most of the injuries were due to handling rock, flying objects, falls or slides of rock or overburden, machinery, and falling objects, in the order stated. The total number of injuries represents an actual increase of 18 over the year 1920.

Reports received from the operating companies indicated that among the workmen inside the quarry pits 23.3 per cent were employed on the basis of 8 hours per day, 24.1 per cent on the 9-hour basis, and 50 on the 10-hour basis. Among the men employed at the outside plants, the 8-hour day prevailed among 18.1 per cent, the 9-hour day among 25.5 per cent, and the 10-hour day among 52.5 per cent.

CEMENT-ROCK QUARRIES.

Reports from 70 companies operating cement-rock quarries showed that they employed 10,815 men, of whom 3,432 worked in and about the pits proper, and 7,383 worked at the outside plants and mills. The men averaged 290 workdays during the year, and worked an aggregate of 3,137,789 shifts. The working time represents a loss of 31 days per man as compared with 1920, while the total number of shifts indicates a loss of 26 per cent.

Accidents killed 20 and injured 2,233 men, or 1.91 killed and 213.50 injured per 1,000 employees (300-day workers). For 1920 the corresponding rates were 2.75 killed and 182.49 injured. Of the 20 fatalities, 5 occurred in California, 3 in Illinois, and 2 each in New York and Pennsylvania.

The leading causes of accidents inside the quarries were haulage equipment, falls or slides of rock, flying objects, machinery, falling objects, handling rock, and falls of persons. Most of the injuries to employees at the outside plants were due to falling objects, machinery, flying objects, falls of persons, hand tools, and burns.

The established length of the working day at cement-rock quarries was for men inside the pits, 8 hours for 10.7 per cent of the workers, 9 hours for 19.8 per cent, and 10 hours for 54 per cent. At the outside plants and mills, 17.7 per cent of the men were employed on the basis of 8 hours per day, 0.7 per cent 9 hours, 7.7 per cent 10 hours, and 19.5 per cent 12 hours.

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MARBLE QUARRIES.

Reports covering accidents at marble quarries were received from 45 plants that were operated part or all of the year. The operators reported the number of men working as 4,549 and the total working time as 1,207,467 shifts, an average of 265 days per man. Of the total number of employees, 2,138 men worked in the quarries and 2,411 worked at the outside rock-dressing plants. An increase in marble quarrying operations is indicated by the fact that more men were employed in 1921 than in any year since 1916.

Accidents resulted in 6 fatalities and 406 injuries during the year, thus indicating a fatality rate of 1.49 and an injury rate of 100.87 per 1,000 employees (300-day workers) as compared with rates of 0.92 killed and 91.98 injured in 1920. Of 170 nonfatal injuries to men working inside the quarries, the majority were due to machinery, drilling and channeling, flying objects, handling rock at face, and falls of persons. Of the 236 injuries at the rock-dressing plants, the main causes were handling rock, machinery, hand tools, flying objects, and falling objects.

For work inside the quarries proper, the reports showed that the 8-hour day prevailed among 36 per cent of the employees, the 9-hour day among 31.8 per cent, and the 10-hour day among 30.5 per cent. Among the men working at the outside plants, 69.4 per cent were employed on the basis of 8 hours per day, 27.9 per cent 9 hours, and only 2.6 per cent 10 hours.

SLATE QUARRIES.

Slate quarries operating in 1921 employed 3,564 men, each of whom averaged 240 work-days during the year, or a total of 854,396 shifts in all. As compared with 1920 the operating time represents a loss of 49 days for each employee. Of the total number of workmen, 2,695 were employed in the quarries and 869 at the outside plants; the former averaging 232 and the latter 263 working days during the year.

Accidents killed 4 men and injured 385 resulting in a fatality rate of 1.40 and an injury rate of 135.18 per thousand 300-day workers as compared with 1.49 and 108.20, respectively, for the preceding year. Of the 280 injuries to men in the quarries, the main causes were handling rock at face, falls or slides of rock, flying objects, machinery, and nails and splinters. At the rock-dressing plants most of the 105 injuries were due to handling rocks, nails and splinters, and machinery.

Nearly all of the employees at slate quarries were reported as working on the basis of 9 hours per day, the number so reported

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being 2,200 or 81.6 per cent of the total; 14.4 per cent worked 10 hours per day. At the outside plants 73.6 per cent of the men worked 9 hours, and 26.4 per cent worked 10 hours per day.

TRAPROCK QUARRIES.

Reports received from 143 operators of traprock quarries for 1921 showed 5,299 men employed and a total working time of 1,146,918 shifts, an average of 216 shifts per man. In the quarries proper 3,945 men were employed, while 1,354 men worked at the crushers and other outside plants. Though the figures for 1921 seemingly show an increase of 348 employees over 1920 this apparent increase is from the inclusion in 1921, of employees at traprock quarries in California, who in 1920 were included with the employees at granite quarries, as reported by the California Industrial Accident Commission. After allowance for inclusion, the reports for 1921 represent an actual reduction of approximately 20 per cent in employees and 23 per cent in total shifts worked.

Accidents during the year resulted in 11 deaths and 879 injuries to the workmen; 8 of the fatalities and 680 injuries occurring inside the pits and 3 fatalities and 199 injuries occurring at the outside plants. The accident rates per thousand 300-day workers were 2.88 killed and 229.92 injured, as compared with 2.61 killed and 208.89 injured in 1920. In the quarries proper most of the accidents were caused by handling rock at face, flying objects, falls or slides of rock, machinery, haulage, and falling objects. At the outside shops the main causes of injuries were flying objects, machinery, haulage, falls of persons, and falling objects

The standard working time inside the quarries was 8 hours for 10 per cent of the men, 9 hours for 26.5 per cent, and 10 hours for 31.7 per cent. In the outside plants 9.1 per cent of the employees worked 8 hours per day, 29.2 per cent 9 hours, and 39.7 per cent 10 hours.

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TABLE 2.—**All quarries:** *Fatalities and injuries, by causes and kinds of quarry, during the year ended December 31, 1921.*

Kind of quarry.	In and about quarry.																In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machine or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Killed:																													
Cement rock	1	....	....	1	2	....	....	1	....	....	2	....	....	....	....	7	1	4	....	....	3	1	2	....	....	....	2	13	20
Granite	3	2	....	1	3	2	....	2	....	....	2	....	....	....	....	15	....	2	....	....	....	....	1	....	....	....	....	3	18
Limestone	8	2	....	10	7	5	2	1	2	1	3	....	....	....	....	41	4	3	....	....	2	1	....	....	....	3	17	58
Marble	3	....	....	....	....	....	....	....	....	....	....	....	2	....	....	5	....	....	....	....	....	1	....	....	....	....	....	1	6
Sandstone and bluestone	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	1	1	....	....	....	....	....	2	3
Slate	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	1	....	....	....	....	....	....	....	....	....	1	4
Trap rock	2	....	....	5	....	....	....	....	....	....	1	....	....	....	....	8	....	....	....	....	1	....	1	....	....	....	1	3	11
Total	**20**	**4**	....	**17**	**12**	**7**	**2**	**4**	**2**	**1**	**8**	....	**2**	....	**1**	**80**	**5**	**10**	....	....	**7**	**4**	**4**	....	....	**4**	**6**	**40**	**120**
Injured:																													
Cement rock	105	55	45	35	136	48	57	67	5	25	62	9	....	5	87	741	98	193	120	75	23	131	204	187	9	115	337	1,492	2,233
Granite	35	70	15	22	15	27	28	184	2	25	58	16	....	14	45	556	14	26	29	12	....	10	23	188	45	4	33	384	940
Limestone	319	718	128	101	336	156	178	472	9	115	312	68	....	59	338	3,309	144	279	166	79	36	168	205	246	71	122	423	1,939	5,248
Marble	6	23	6	3	7	16	10	23	1	26	31	4	3	3	8	170	6	27	18	13	1	11	15	16	99	5	25	236	406
Sandstone and bluestone	35	48	15	11	15	17	21	44	....	7	22	2	....	8	48	293	9	13	10	2	1	5	11	17	4	2	7	81	374
Slate	31	57	8	5	7	5	12	21	....	7	14	14	....	1	98	280	3	13	3	14	2	3	6	8	36	1	16	105	385
Trap rock	89	174	24	21	38	21	36	117	1	31	51	5	1	10	61	680	22	27	13	7	3	19	18	29	7	5	49	199	879
Total	**620**	**1,145**	**241**	**198**	**554**	**290**	**342**	**928**	**18**	**236**	**550**	**118**	**4**	**100**	**685**	**6,029**	**296**	**578**	**359**	**202**	**66**	**347**	**482**	**691**	**271**	**254**	**890**	**4,436**	**10,465**

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TABLE 3.—*All quarries: Men employed, number killed and injured, and days worked, by States, during the year ended December 31, 1921.*

State.	In and about quarry.					In outside work.					Total.							
	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Widows.	Orphans.
Alabama	1,383	292,872	212	.....	185	550	145,474	264	1	187	25	1,933	438,346	227	1	372	.....	.....
Arizona	132	37,266	282	.....	1	14	3,808	272	.....	.....	5	146	41,074	281	.....	1	1	3
Arkansas	273	61,192	224	2	8	120	24,600	205	.....	2	10	393	85,792	218	2	10	.....	.....
California	1,800	444,791	247	10	350	1,919	630,901	329	2	322	89	3,719	1,075,692	289	12	672	4	8
Colorado	485	87,183	180	.....	44	162	32,993	204	2	19	27	647	120,176	186	2	63	1	2
Connecticut	462	103,628	224	1	76	110	27,811	253	.....	20	23	572	131,439	230	1	96	.....	.....
Florida	112	37,838	338	.....	1	54	14,812	274	.....	1	4	166	52,650	317	.....	2	.....	.....
Georgia	1,165	297,816	256	1	34	723	215,320	298	1	52	28	1,888	513,136	272	2	86	1	2
Idaho	120	31,715	264	1	18	14	4,800	343	.....	2	5	134	36,515	273	1	20	.....	.....
Illinois	2,112	460,558	218	2	342	1,129	288,121	255	3	168	53	3,241	748,679	231	5	510	3	11
Indiana	2,718	672,382	247	6	345	1,716	462,367	269	2	249	68	4,434	1,134,749	256	8	594	6	17
Iowa	503	110,525	220	1	80	200	40,700	204	.....	14	25	703	151,225	215	1	94	1	1
Kansas	561	112,556	201	.....	56	802	232,162	289	.....	203	32	1,363	344,718	253	.....	259	.....	.....
Kentucky	1,064	206,265	194	3	136	239	48,833	204	1	11	34	1,303	255,098	196	4	147	3	4
Maine	1,039	243,801	235	.....	72	729	207,226	284	.....	74	29	1,768	451,027	255	.....	146	.....	.....
Maryland	775	184,208	238	3	100	627	177,919	284	.....	102	32	1,402	362,127	258	3	202	2	4
Massachusetts	1,800	416,183	231	3	225	1,172	286,969	245	1	189	78	2,972	703,152	237	4	414	4	12
Michigan	1,056	205,930	195	2	118	942	201,736	214	5	377	21	1,998	407,666	204	7	495	6	13
Minnesota	790	155,366	197	.....	102	373	70,495	189	.....	80	45	1,163	225,861	194	.....	182	.....	.....
Missouri	2,361	582,989	247	.....	277	718	193,908	270	.....	138	69	3,079	776,897	252	.....	415	.....	.....
Montana	58	9,909	171	.....	8	141	22,560	160	.....	13	8	199	32,469	163	.....	21	.....	.....
Nebraska	77	15,736	204	.....	4	14	2,355	168	.....	.....	5	91	18,091	199	.....	4	.....	.....
New Hampshire	508	92,930	183	1	36	229	56,883	248	.....	61	26	737	149,813	203	1	97	.....	.....
New Jersey	1,230	285,347	232	1	175	612	164,321	268	1	181	47	1,842	449,668	244	2	356	2	.....
New Mexico	310	33,788	109	.....	21	77	4,200	55	.....	.....	9	387	37,988	98	.....	21	.....	.....
New York	2,736	545,023	199	3	386	1,621	353,194	218	3	435	131	4,357	898,217	206	6	821	2	6
North Carolina	809	166,925	206	2	38	237	47,760	202	3	3	16	1,046	214,685	205	5	41	2	.....
Ohio	2,950	648,842	220	3	451	1,620	407,477	252	7	265	105	4,570	1,056,319	231	10	716	8	24
Oklahoma	492	108,002	220	1	49	479	148,060	309	.....	28	14	971	256,062	264	1	77	1	.....
Oregon	107	19,178	179	.....	5	12	1,161	97	.....	.....	8	119	20,339	171	.....	5	.....	.....

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Pennsylvania	9,867	1,995,290	202	12	1,275	5,127	1,268,826	247	4	623	369	14,994	3,264,116	218	16	1,898	7	14
Rhode Island	197	48,077	244	.....	15	121	33,705	279	.....	6	11	318	81,782	257	.....	21	.....	.....
South Dakota	142	30,242	213	3	16	20	3,664	183	.....	8	9	162	33,906	209	3	24	.....	.....
Tennessee	1,254	303,287	242	3	112	605	147,442	244	2	79	31	1,859	450,729	242	5	191	2	6
Texas	899	201,231	224	1	159	1,010	283,542	281	1	152	36	1,909	484,773	254	2	311	1	3
Utah	260	53,779	207	2	34	153	46,100	301	.....	16	18	413	99,879	242	2	50	.....	.....
Vermont	2,247	520,865	232	6	229	1,883	480,789	255	1	125	66	4,130	1,001,654	243	7	354	5	9
Virginia	1,275	284,197	223	2	114	515	119,749	233	.....	17	47	1,790	403,946	226	2	131	1	1
Washington	270	71,251	264	1	39	92	23,214	252	.....	10	15	362	94,465	261	1	49	.....	.....
West Virginia	973	186,023	191	2	123	385	86,819	226	.....	34	22	1,358	272,842	201	2	157	2	5
Wisconsin	1,551	370,599	239	1	126	508	118,734	234	.....	159	59	2,059	489,333	238	1	285	.....	.....
Wyoming	112	20,914	187	.....	3	34	5,980	176	.....	.....	4	146	26,894	184	.....	3	.....	.....
Not segregated	257	68,042	265	1	41	85	25,516	300	.....	11	6	342	93,558	274	1	52	.....	.....
Total, 1921	**49,292**	**10,824,541**	**220**	**80**	**6,029**	**27,893**	**7,163,006**	**257**	**40**	**4,436**	**1,764**	**77,185**	**17,987,547**	**233**	**120**	**10,465**	**65**	**145**
Total, 1920	53,642	13,685,149	255	128	6,369	32,846	9,441,499	287	50	4,848	1,717	86,488	23,126,648	267	178	11,217	94	144

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TABLE 4.—*All quarries: Fatalities, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.																	In outside works.													Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machine or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Alabama																											1	1	1
Arizona																													
Arkansas				1		1										2													2
California	1			6	2						1					10		1			1		1					12	12
Colorado																					1	1						2	2
Connecticut											1					1													1
Florida																													
Georgia					1											1		1					1					2	2
Idaho											1					1													1
Illinois					1			1								2		2			1							3	5
Indiana					1	2	1	1			1					6	1						1					2	8
Iowa											1					1													1
Kansas																													
Kentucky	1			1	1											3	1											1	4
Maine																													
Maryland	2				1											3													3
Massachusetts	1					1		1								3				1								1	4
Michigan					1					1						2	1	1								2	1	5	7
Minnesota																													
Missouri																													
Montana																													

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TABLE 5.—***All quarries:*** *Injuries, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.															In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machines or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Alabama	14	31	6	2	23	11	20	32	....	16	18	....	....	3	9	185	11	14	8	8	1	9	24	12	29	11	60	187	372
Arizona	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1
Arkansas	5	....	1	1	....	....	....	1	....	....	....	....	....	....	....	8	....	....	....	....	....	....	....	1	....	1	....	2	10
California	88	29	25	17	47	33	24	27	1	11	18	4	....	4	22	350	17	40	26	11	5	49	54	45	3	27	45	322	672
Colorado	3	23	1	1	8	....	....	3	....	1	2	1	....	....	1	44	2	5	1	2	....	1	1	1	1	3	2	19	63
Connecticut	2	21	1	2	7	2	3	8	....	12	12	....	....	1	5	76	3	3	....	2	....	3	2	5	1	....	1	20	96
Florida	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	1	2
Georgia	1	6	3	2	3	2	2	2	2	1	4	1	....	1	4	34	2	3	2	7	1	5	5	6	15	1	5	52	86
Idaho	8	1	....	1	5	....	....	2	....	....	....	1	....	....	....	18	....	2	....	....	....	....	....	....	....	....	....	....	2	20
Illinois	40	21	8	22	41	18	24	50	....	9	53	8	....	19	29	342	19	18	18	14	6	11	14	19	1	11	37	168	510
Indiana	22	36	12	5	14	16	36	44	4	17	59	8	....	6	66	345	9	45	20	3	2	13	21	51	16	12	57	249	594
Iowa	2	13	4	2	13	9	2	13	....	4	7	3	....	6	2	80	3	1	....	2	....	....	2	....	6	....	....	14	94
Kansas	4	15	3	3	9	1	....	2	....	4	8	2	....	1	4	56	8	24	29	24	2	13	26	42	1	13	21	203	259
Kentucky	34	43	2	2	8	3	1	18	1	5	6	....	....	....	13	136	3	....	2	....	....	....	1	1	1	1	2	11	147
Maine	6	21	....	1	4	2	5	14	....	2	7	1	....	1	8	72	1	9	8	5	1	11	7	8	3	8	13	74	146
Maryland	6	20	5	3	6	5	10	25	1	5	5	3	....	4	2	100	8	19	1	4	1	14	16	9	1	8	21	102	202
Massachusetts	12	58	3	5	12	6	11	69	....	11	18	7	....	1	12	225	10	11	17	7	....	7	8	81	17	6	25	189	414
Michigan	3	25	9	6	12	1	7	21	1	5	15	....	....	4	9	118	23	58	42	6	12	35	33	61	4	20	83	377	495
Minnesota	1	19	3	3	5	12	1	23	....	3	5	3	....	....	24	102	3	6	3	4	....	4	3	5	5	....	47	80	182
Missouri	39	56	16	5	22	14	11	42	1	8	25	4	....	....	34	277	13	12	13	6	1	7	16	6	9	14	39	138	415
Montana	....	....	....	5	1	1	....	....	....	....	1	....	....	....	....	8	1	6	....	....	2	1	....	....	1	1	1	13	21

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Nebraska	1	2	....	....	1	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	4
New Hampshire	....	7	1	1	....	3	5	5	....	....	7	....	....	2	5	36	1	2	3	1	....	1	2	38	6	1	6	61	97
New Jersey	6	40	5	4	4	7	23	31	....	8	18	5	....	3	21	175	26	24	13	7	....	8	27	28	2	5	41	181	356
New Mexico	5	....	....	....	1	2	1	2	....	....	4	4	....	....	2	21	....	....	....	....	....	....	....	....	....	....	....	....	21
New York	30	89	31	4	30	19	14	49	1	14	40	7	....	8	50	386	20	54	40	25	4	30	57	64	5	28	99	435	821
North Carolina	3	4	....	6	2	....	3	11	....	....	4	....	....	....	5	38	....	1	....	....	....	....	....	2	....	....	....	3	41
Ohio	29	45	20	11	53	28	41	50	1	28	57	9	....	14	65	451	14	47	19	11	5	22	33	28	9	30	47	265	716
Oklahoma	6	7	....	4	6	1	3	6	2	....	7	2	....	....	5	49	1	8	4	....	1	3	5	....	....	4	2	28	77
Oregon	3	....	....	1	....	....	....	....	....	1	....	....	....	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	5
Pennsylavnia	148	289	54	33	142	50	66	172	2	34	71	20	1	13	180	1,275	57	81	45	28	15	59	84	63	48	35	108	623	1,898
Rhode Island	1	2	1	....	1	....	1	2	....	3	2	....	....	....	2	15	1	1	....	....	....	....	....	3	....	....	1	6	21
South Dakota	....	3	....	....	....	....	6	5	....	....	....	....	....	....	2	16	....	2	....	....	1	....	2	2	1	....	....	8	24
Tennessee	3	31	1	....	8	5	8	11	....	7	5	....	3	1	29	112	3	8	5	....	....	5	5	12	11	1	29	79	191
Texas	19	26	2	10	18	10	5	30	....	8	15	5	....	1	10	159	7	24	5	6	3	13	13	13	7	8	53	152	311
Utah	4	6	2	3	3	2	1	6	....	1	2	....	....	....	4	34	3	5	2	....	1	4	....	1	....	....	....	16	50
Vermont	18	48	7	5	8	15	4	29	....	8	25	12	....	2	48	229	....	18	11	15	....	4	6	4	46	1	20	125	354
Virginia	11	32	5	7	14	2	1	20	....	1	11	5	....	....	5	114	....	4	3	1	....	5	1	....	....	....	3	17	131
Washington	10	3	1	8	4	....	....	5	....	1	6	....	....	....	1	39	....	5	3	....	....	....	....	....	2	....	....	10	49
West Virginia	24	34	4	7	15	5	1	23	1	3	2	1	....	....	3	123	9	5	2	....	2	4	4	5	1	1	1	34	157
Wisconsin	7	27	5	5	3	5	....	48	....	4	11	2	....	5	4	126	8	12	12	3	....	5	10	69	19	2	19	159	285
Wyoming	....	1	....	1	....	....	....	1	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3
Not segregated	2	10	....	....	1	....	1	26	....	1	....	....	....	....	....	41	....	1	....	....	....	1	....	6	....	....	2	11	52
Total, 1921	**620**	**1,145**	**241**	**198**	**554**	**290**	**342**	**928**	**18**	**236**	**550**	**118**	**4**	**100**	**685**	**6,029**	**296**	**578**	**359**	**202**	**66**	**347**	**482**	**691**	**271**	**254**	**890**	**4,436**	**10,465**
Total, 1920	642	985	269	214	790	296	419	906	25	227	518	113	....	97	868	6,369	450	709	433	178	61	376	521	655	306	267	892	4,848	11,217

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TABLE 6.—***All quarries:*** *Fatalities, and injuries per 1,000 300-day workers employed, by States, during the year ended December 31, 1921.*

State.	In and about quarry.			In outside works.			Total.		
	Number of 300-day workers.	Killed.	Injured.	Number of 300-day workers.	Killed.	Injured.	Number of 300-day workers.	Killed.	Injured.
Alabama	976	.....	189.55	485	2.06	385.57	1,461	.68	254.62
Arizona	124	.....	8.06	13	.....	.....	137	.....	7.30
Arkansas	204	9.80	39.22	82	.....	24.39	286	6.99	34.97
California	1,483	6.74	236.01	2,103	.95	153.11	3,586	3.35	187.40
Colorado	291	.....	151.20	110	18.18	172.73	401	4.99	157.11
Connecticut	345	2.90	220.29	93	.....	215.05	438	2.28	219.18
Florida	126	.....	7.94	49	.....	20.41	175	.....	11.43
Georgia	993	1.01	34.24	717	1.39	72.52	1,710	1.17	50.29
Idaho	106	9.43	169.81	16	.....	125.00	122	8.20	163.93
Illinois	1,535	1.30	222.80	961	3.12	174.82	2,496	2.00	204.33
Indiana	2,241	2.68	153.95	1,541	1.30	161.58	3,782	2.12	157.06
Iowa	368	2.72	217.39	136	.....	102.94	504	1.98	186.51
Kansas	375	.....	149.33	774	.....	262.27	1,149	.....	225.41
Kentucky	688	4.36	197.67	162	6.17	67.90	850	4.71	172.94
Maine	812	.....	88.67	691	.....	107.09	1,503	.....	97.14
Maryland	614	4.89	162.87	593	.....	172.01	1,207	2.49	167.36
Massachusetts	1,387	2.16	162.22	957	1.04	197.49	2,344	1.71	176.62
Michigan	687	2.91	171.76	672	7.44	561.01	1,359	5.15	364.24
Minnesota	518	.....	196.91	235	.....	340.43	753	.....	241.70
Missouri	1,943	.....	142.56	647	.....	213.29	2,590	.....	160.23
Montana	33	.....	242.42	75	.....	173.33	108	.....	194.44
Nebraska	52	.....	76.92	8	.....	.....	60	.....	66.67
New Hampshire	310	3.23	116.13	189	.....	322.75	499	2.00	194.39
New Jersey	951	1.05	184.02	548	1.82	330.29	1,499	1.33	237.49
New Mexico	113	.....	185.84	14	.....	.....	127	.....	165.35
New York	1,817	1.65	212.44	1,177	2.55	369.58	2,994	2.00	274.22
North Carolina	557	3.59	68.22	159	18.87	18.87	716	6.98	57.26
Ohio	2,163	1.39	208.51	1,358	5.15	195.14	3,521	2.84	203.35
Oklahoma	360	2.78	136.11	494	.....	56.68	854	1.17	90.16
Oregon	64	.....	78.13	4	.....	.....	68	.....	73.53
Pennsylvania	6,651	1.80	191.70	4,229	.95	147.32	10,880	1.47	174.45
Rhode Island	160	.....	93.75	113	.....	53.10	273	.....	76.92
South Dakota	101	29.70	158.42	12	.....	666.67	113	26.55	212.39
Tennessee	1,011	2.97	110.78	491	4.07	160.90	1,502	3.33	127.16
Texas	671	1.49	236.96	945	1.06	160.85	1,616	1.24	192.45
Utah	179	11.17	189.94	154	.....	103.90	333	6.01	150.15
Vermont	1,736	3.46	131.91	1,603	.62	77.98	3,339	2.10	106.02
Virginia	947	2.11	120.38	399	.....	42.61	1,346	1.49	97.33
Washington	238	4.20	163.87	77	.....	129.87	315	3.17	155.56
West Virginia	620	3.23	198.39	289	.....	117.65	909	2.20	172.72
Wisconsin	1,235	.81	102.02	396	.....	401.52	1,631	.61	174.74
Wyoming	70	.....	42.86	20	.....	.....	90	.....	33.33
Not segregated	227	4.41	180.62	85	.....	129.41	312	3.21	166.67
Total, 1921	**36,082**	**2.22**	**167.09**	**23,876**	**1.68**	**185.79**	**59,958**	**2.00**	**174.54**
Total, 1920	45,617	2.81	139.62	31,472	1.59	154.04	77,089	2.31	145.51

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TABLE 7.—***Granite quarries:*** *Men employed, number killed and injured, and days worked, by States, during the year ended December 31, 1921.*

State.	In and about quarry.					In outside work.					Total.						Widows.	Orphans.
	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.		
California	189	44,020	233	1	17	69	14,060	204	.....	8	12	258	58,080	225	1	25	1	3
Colorado	90	20,840	232	.....	5	45	7,500	167	.....	3	6	135	28,340	210	.....	8	.....	.....
Connecticut	143	30,109	211	.....	8	9	1,638	182	.....	.....	11	152	31,747	209	.....	8	.....	.....
Georgia	595	135,106	227	1	7	96	24,430	254	.....	2	19	691	159,536	231	1	9	1	2
Maine	691	141,557	205	.....	40	220	33,500	152	.....	4	23	911	175,057	192	.....	44	.....	.....
Maryland	266	66,167	249	1	31	60	12,630	211	.....	17	9	326	78,797	242	1	48	1	.....
Massachusetts	897	212,615	237	3	108	573	145,518	254	.....	132	39	1,470	358,133	244	3	240	3	9
Minnesota	493	99,051	201	.....	32	162	28,310	175	.....	6	29	655	127,361	194	.....	38	.....	.....
New Hampshire	508	92,930	183	1	36	229	56,883	248	.....	61	26	737	149,813	203	1	97	.....	.....
New Jersey	51	8,700	171	.....	10	.....	.....	.....	.....	.....	3	51	8,700	171	.....	10	.....	.....
New York	83	11,034	133	.....	10	57	13,755	241	.....	7	8	140	24,789	177	.....	17	.....	.....
North Carolina	669	129,825	194	2	29	149	23,400	157	3	2	12	818	153,225	187	5	31	2	.....
Oregon	54	11,508	213	.....	5	8	861	108	.....	.....	5	62	12,369	200	.....	5	.....	.....
Pennsylvania	201	40,787	203	.....	10	60	8,250	138	.....	4	22	261	49,037	188	.....	14	.....	.....
Rhode Island	154	40,802	265	.....	10	105	30,105	287	.....	5	8	259	70,907	274	.....	15	.....	.....
Texas	93	15,292	164	.....	4	.....	.....	.....	.....	.....	11	93	15,292	164	.....	4	.....	.....
Vermont	709	166,549	235	2	73	197	46,590	236	.....	3	23	906	213,139	235	2	76	2	8
Virginia	90	19,550	217	.....	9	10	2,000	200	.....	.....	6	100	21,550	216	.....	9	.....	.....
Washington	76	17,163	226	.....	6	17	2,940	173	.....	3	6	93	20,103	216	.....	9	.....	.....
Wisconsin	748	198,983	266	1	64	209	55,466	265	.....	114	8	957	254,449	266	1	178	.....	.....
Not segregated	305	69,254	227	3	42	99	23,176	234	.....	13	11	401	92,430	229	3	55	.....	.....
Total, 1921	**7,105**	**1,571,842**	**221**	**15**	**556**	**2,374**	**531,012**	**224**	**3**	**384**	**297**	**9,479**	**2,102,854**	**222**	**18**	**940**	**10**	**22**
Total, 1920	**9,369**	**2,295,241**	**245**	**21**	**879**	**3,366**	**903,832**	**269**	**1**	**513**	**339**	**12,735**	**3,199,073**	**251**	**22**	**1,392**	**11**	**12**

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TABLE 8.—***Granite quarries:*** *Fatalities, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.															In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machines or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
California					1											1													1
Colorado																													0
Connecticut																													0
Georgia					1											1													1
Maine																													0
Maryland					1											1													1
Massachusetts	1					1		1								3													3
Minnesota																													0
New Hampshire				1												1													1
New Jersey																													0
New York																													0
North Carolina						1					1					2		2					1					3	5
Oregon																													0
Pennsylvania																													0
Rhode Island																													0
Texas																													0
Vermont	2															2													2
Virginia																													0
Washington																													0
Wisconsin											1					1													1
Not segregated		2						1								3													3
Total, 1921	**3**	**2**	....	**1**	**3**	**2**	....	**2**	....	....	**2**	....	....	....	....	**15**	....	**2**	....	....	....	....	**1**	....	....	....	....	**3**	**18**
Total, 1920	**7**	**1**	....	**4**	**2**	**4**	**1**	....	....	....	**2**	....	....	....	....	**21**	....	**1**	....	....	....	....	....	....	....	....	....	**1**	**22**

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TABLE 9.—*Granite quarries: Injuries, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.																In outside works.												Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machines or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
California	6		4			1	1	2			2				1	17		1	2	1		2			1		1	8	25
Colorado	2			1							1	1				5	1		1	1								3	8
Connecticut							2	4		1					1	8													8
Georgia		3		1		1			1		1					7							1		1			2	9
Maine	1				4	2	5	12		2	6	1		1	6	40							1	1			2	4	44
Maryland		4		1	2	1	5	6	1	2	3	3		3		31		5		1		2	6	2			1	17	48
Massachusetts	6	13		2	5	3	3	43		8	11	7			7	108	7	5	11	5		1	7	67	14	2	13	132	240
Minnesota	1	5	3	2		3		5		2	1	1			9	32			1					4			1	6	38
New Hampshire		7	1	1		3	5	5			7			2	5	36	1	2	3	1		1	2	38	6	1	6	61	97
New Jersey		5		1				4								10													10
New York	3	2	1			1		2						1		10							2	2	2		1	7	17
North Carolina	3	1		6	2		3	9			4				1	29								2				2	31
Oregon	3			1						1						5													5
Pennsylvania		3		2		2	1	2								10		1				1			2			4	14
Rhode Island		2	1					1		3	1				2	10		1						3			1	5	15
Texas						1	1			1					1	4													4
Vermont	4	8		2	2	8	1	22		4	9	1		2	10	73		1		1			1					3	76
Virginia		3	1	2								1			2	9													9
Washington	2	1						1		1	1					6		1							2			3	9
Wisconsin	2	1	4			1		39			11	1		5		64	5	8	11	2		2	3	63	16		4	114	178
Not segregated	2	12					1	27								42		1				1		6	1	1	3	13	55
Total, 1921	35	70	15	22	15	27	28	184	2	25	58	16		14	45	556	14	26	29	12		10	23	188	45	4	33	384	940
Total, 1920	77	142	51	25	67	52	42	184	5	20	99	16		8	91	879	28	67	28	30	4	33	47	158	42	5	71	513	1,392

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TABLE 10.—***Limestone quarries:*** *Men employed, number killed and injured, and days worked, by States, during the year ended December 31, 1921.*

State.	In and about quarry.					In outside work.					Total.						Widows.	Orphans.
	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.		
Alabama	980	179,785	183	.....	114	305	70,174	230	.....	3	19	1,285	249,959	195	.....	117	.....	.....
Arizona	110	35,924	327	.....	1	14	3,808	272	.....	.....	4	124	39,732	320	.....	1	.....	.....
Arkansas	135	34,560	256	2	2	95	20,600	217	.....	2	4	230	55,160	240	2	4	.....	.....
California	76	20,722	273	2	13	48	12,231	255	.....	7	8	124	32,953	266	2	20	1	2
Colorado	243	40,379	166	.....	29	8	1,255	157	.....	1	6	251	41,634	166	.....	30	.....	.....
Florida	112	37,838	338	.....	1	54	14,812	274	.....	1	4	166	52,650	317	.....	2	.....	.....
Georgia	271	76,776	283	.....	6	135	42,240	313	.....	5	4	406	119,016	293	.....	11	.....	.....
Idaho	70	17,525	250	.....	11	4	1,460	365	.....	.....	3	74	18,985	257	.....	11	.....	.....
Illinois	1,956	421,657	216	1	326	817	183,095	224	1	132	47	2,773	604,752	218	2	458	1	4
Indiana	2,610	645,332	247	6	335	1,356	349,687	258	.....	196	66	3,966	995,019	251	6	531	4	15
Iowa	422	87,722	208	1	68	164	31,166	190	.....	14	23	586	118,888	203	1	82	1	1
Kansas	437	81,529	187	.....	27	143	24,616	172	.....	2	23	580	106,145	183	.....	29	.....	.....
Kentucky	955	181,044	190	3	127	213	43,261	203	1	10	28	1,168	224,305	192	4	137	3	4
Maine	139	37,656	271	.....	27	373	132,434	355	.....	66	4	512	170,090	332	.....	93	.....	.....
Maryland	439	99,841	227	2	52	549	160,729	293	.....	84	20	988	260,570	264	2	136	1	4
Massachusetts	178	52,405	294	.....	22	198	53,501	270	.....	37	10	376	105,906	282	.....	59	.....	.....
Michigan	1,013	196,955	194	2	95	917	197,072	215	5	373	19	1,930	394,027	204	7	468	6	13
Minnesota	173	30,745	178	.....	24	152	30,625	201	.....	41	10	325	61,370	189	.....	65	.....	.....
Missouri	1,669	395,297	237	.....	152	542	144,072	266	.....	75	62	2,211	539,369	244	.....	227	.....	.....
Montana	29	6,689	231	.....	1	6	1,230	205	.....	.....	4	35	7,919	226	.....	1	.....	.....
Nebraska	77	15,736	204	.....	4	14	2,355	168	.....	.....	5	91	18,091	199	.....	4	.....	.....
New Jersey	318	76,531	241	1	25	34	8,400	247	.....	3	13	352	84,931	241	1	28	1	.....
New Mexico	170	20,128	118	.....	15	62	2,834	46	.....	.....	6	232	22,962	99	.....	15	.....	.....
New York	1,589	336,841	212	1	241	684	165,206	242	1	226	68	2,273	502,057	221	2	467	.....	.....
North Carolina	140	37,100	265	.....	9	88	24,360	277	.....	1	4	228	61,460	270	.....	10	.....	.....
Ohio	2,143	463,133	216	2	334	1,374	353,101	257	7	223	81	3,517	816,234	232	9	557	7	21
Oklahoma	410	85,327	208	1	43	329	95,560	290	.....	14	11	739	180,887	245	1	57	1	.....
Pennsylvania	5,823	1,085,933	186	7	709	2,278	522,856	230	1	264	212	8,101	1,608,789	199	8	973	2	7
South Dakota	23	6,340	276	.....	1	11	1,919	174	.....	2	4	34	8,259	243	.....	3	.....	.....
Tennessee	583	141,165	242	2	60	155	38,027	245	1	48	22	738	179,192	243	9	108	.....	1

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Texas	633	136,525	216	1	122	425	86,407	203	.....	30	20	1,058	222,932	211	1	152	1	3
Utah	204	40,169	197	2	27	10	2,050	205	.....	3	12	214	42,219	197	2	30	.....	.....
Vermont	146	37,082	254	.....	20	57	12,661	222	.....	2	9	203	49,743	245	.....	22	.....	.....
Virginia	838	180,883	227	1	82	416	96,923	233	.....	17	33	1,254	286,806	229	1	99	1	1
Washington	63	18,172	288	1	7	44	14,542	331	.....	2	5	107	32,714	306	1	9	.....	.....
West Virginia	846	154,297	182	2	116	201	51,456	256	.....	12	17	1,047	205,753	197	2	128	2	5
Wisconsin	676	154,444	228	.....	54	276	59,161	214	.....	42	87	952	213,605	224	.....	96	.....	.....
Wyoming	92	18,714	203	.....	3	16	4,000	250	.....	.....	3	108	22,714	210	.....	3	.....	.....
Not segregated	96	30,406	317	1	4	97	31,610	326	.....	1	5	193	62,016	321	1	5	.....	.....
Total, 1921	**26,887**	**5,728,317**	**213**	**41**	**3,309**	**12,664**	**3,091,496**	**244**	**17**	**1,939**	**935**	**39,551**	**8,819,813**	**223**	**58**	**5,248**	**32**	**81**
Total, 1920	**23,226**	**7,343,112**	**251**	**74**	**3,590**	**13,925**	**3,811,541**	**274**	**22**	**1,731**	**925**	**43,151**	**11,154,653**	**259**	**96**	**5,321**	**60**	**72**

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TABLE 11.—*Limestone quarries: Fatalities, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.																In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machine or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Alabama																													0
Arizona																													0
Arkansas				1		1										2													2
California				2												2													2
Colorado																													0
Florida																													0
Georgia																													0
Idaho																													0
Illinois					1											1		1										1	2
Indiana					1	2	1	1			1					6													6
Iowa											1					1													1
Kansas																													0
Kentucky	1			1	1											3	1											1	4
Maine																													0
Maryland	2															2													2
Massachusetts																													0
Michigan					1					1						2	1	1								2	1	5	7
Minnesota																													0
Missouri																													0
Montana																													0
Nebraska																													0

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TABLE 12.—***Limestone quarries:*** *Injuries, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.															In outside works.										Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machines or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Alabama	7	31	6	2	18	3	15	15	....	5	3	....	....	1	8	**114**	3	....	....	....	....	....	....	....	....	....	....	**3**	**117**
Arizona	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	**1**	....	....	....	....	....	....	....	....	....	....	....	....	**1**
Arkansas	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	**2**	....	....	....	....	....	....	....	1	....	1	....	**2**	**4**
California	2	3	....	....	1	3	....	1	....	1	....	....	....	....	2	**13**	....	1	....	1	....	1	2	....	....	1	1	**7**	**20**
Colorado	....	21	....	....	3	....	....	2	....	1	1	....	....	....	1	**29**	....	....	....	....	....	....	....	....	1	....	....	**1**	**30**
Florida	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	**1**	1	....	....	....	....	....	....	....	....	....	....	**1**	**2**
Georgia	1	1	....	1	2	....	....	....	1	....	....	....	....	....	....	**6**	....	....	....	3	1	....	....	....	....	....	1	**5**	**11**
Idaho	4	1	....	....	4	....	....	1	....	....	....	1	....	....	....	**11**	....	....	....	....	....	....	....	....	....	....	....	....	**11**
Illinois	39	21	8	20	36	17	21	50	....	8	53	8	....	19	26	**326**	17	13	16	11	1	9	13	15	1	6	30	**132**	**458**
Indiana	18	36	11	5	13	16	36	44	4	16	57	8	....	6	65	**335**	8	36	16	3	2	10	15	50	16	4	36	**196**	**531**
Iowa	1	13	3	1	7	9	1	12	....	4	6	3	....	6	2	**68**	3	1	....	2	....	....	2	....	6	....	....	**14**	**82**
Kansas	1	15	....	3	3	....	....	1	....	....	4	....	....	....	....	**27**	....	....	....	....	....	....	....	....	1	....	1	**2**	**29**
Kentucky	34	43	2	2	6	1	1	18	....	3	5	....	....	....	12	**127**	2	....	2	....	....	....	1	1	1	1	2	**10**	**137**
Maine	3	19	....	....	....	....	....	2	....	....	1	....	....	....	2	**27**	1	8	8	5	1	11	6	7	....	8	11	**66**	**93**
Maryland	6	16	4	2	2	4	5	5	....	3	2	....	....	1	2	**52**	7	14	1	3	1	12	10	7	1	8	20	**84**	**136**
Massachusetts	1	12	....	1	2	....	1	3	....	1	1	....	....	....	....	**22**	2	3	4	1	....	6	1	6	2	4	8	**37**	**59**
Michigan	3	19	7	6	12	1	7	6	1	5	15	....	....	4	9	**95**	22	58	42	6	12	35	33	59	4	20	82	**373**	**468**
Minnesota	....	7	....	....	5	4	1	1	....	....	4	2	....	....	....	**24**	2	4	2	4	....	3	1	....	4	....	21	**41**	**65**
Missouri	30	41	4	4	13	8	4	23	....	2	15	2	....	....	6	**152**	12	10	12	5	....	4	13	2	2	7	8	**75**	**227**
Montana	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	**1**	....	....	....	....	....	....	....	....	....	....	....	....	**1**
Nebraska	1	2	....	....	1	....	....	....	....	....	....	....	....	....	....	**4**	....	....	....	....	....	....	....	....	....	....	....	....	**4**

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New Jersey	1	4	....	1	2	1	2	2	....	....	5	3	....	....	4	25	....	1	1	....	....	1	....	....	....	....	....	3	28
New Mexico	1	....	....	....	1	2	1	1	....	....	3	4	....	....	2	15	....	....	....	....	....	....	....	....	....	....	....	....	15
New York	17	38	21	3	16	7	12	37	1	8	24	7	....	5	45	241	15	34	18	10	2	15	26	27	2	15	62	226	467
North Carolina	....	3	....	....	....	....	....	2	....	....	....	....	....	....	4	9	....	1	....	....	....	....	....	....	....	....	....	1	10
Ohio	18	34	14	4	52	20	33	36	1	23	42	8	....	7	42	334	11	41	12	10	5	20	27	19	8	28	42	223	557
Oklahoma	6	7	....	4	4	1	3	6	....	....	6	2	....	....	4	43	....	3	1	....	....	1	5	....	....	3	1	14	57
Pennsylvania	71	187	30	20	94	36	26	108	....	21	38	12	....	8	58	709	23	30	19	12	8	28	36	31	11	15	51	264	973
South Dakota	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	2	....	....	....	....	2	3
Tennessee	....	25	1	....	....	....	2	5	....	....	....	....	....	1	26	60	2	1	4	....	....	....	....	7	7	....	27	48	108
Texas	14	20	2	4	13	8	4	28	....	6	14	5	....	1	3	122	5	8	2	....	2	2	5	5	1	....	....	30	152
Utah	1	5	2	2	3	2	1	6	....	1	1	....	....	....	3	27	....	3	....	....	....	....	....	....	....	....	....	3	30
Vermont	1	9	4	....	2	....	....	2	....	....	1	....	....	....	1	20	....	....	....	1	....	....	....	....	....	....	1	2	22
Virginia	8	28	3	4	3	2	1	19	....	1	9	1	....	....	3	82	....	4	3	1	....	5	1	....	....	....	3	17	99
Washington	4	....	1	....	....	....	....	1	....	....	....	....	....	....	1	7	....	....	2	....	....	....	....	....	....	....	....	2	9
West Virginia	21	32	4	7	15	5	....	23	1	2	2	1	....	....	3	116	4	1	....	....	1	2	....	3	....	....	1	12	128
Wisconsin	4	22	1	3	2	4	....	9	....	4	....	1	....	....	4	54	3	4	1	1	....	3	6	6	3	1	14	42	96
Wyoming	....	1	....	1	....	....	....	1	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	3
Not segregated	1	....	....	....	1	1	....	1	....	....	....	....	....	....	....	4	1	....	....	....	....	....	....	....	....	....	....	1	5
Total, 1921	319	718	128	101	336	156	178	472	9	115	312	68	....	59	338	3,309	144	279	166	79	36	168	205	246	71	122	423	1,939	5,248
Total, 1920	322	614	142	132	487	162	288	469	17	128	268	70	....	59	432	3,590	215	300	122	58	26	157	200	222	40	98	293	1,731	5,321

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TABLE 13.—*Sandstone and bluestone quarries: Men employed, number killed and injured, and days worked, by States, during the year ended December 31, 1921.*

State.	In and about quarry.					In outside works.					Total.						Widows.	Orphans.
	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.		
Arkansas	113	19,132	169	.....	6	25	4,000	160	.....	.....	5	138	23,132	168	.....	6	.....	.....
Colorado	79	7,170	91	.....	7	7	530	76	.....	.....	12	86	7,700	90	.....	7	.....	.....
Connecticut	9	1,865	207	.....	1	2	420	210	.....	.....	3	11	2,285	208	.....	1	.....	.....
Kentucky	69	13,941	202	.....	3	21	4,162	198	.....	1	5	90	18,103	201	.....	4	.....	.....
Massachusetts	95	16,820	177	.....	8	47	10,559	225	1	2	4	142	27,379	193	1	10	1	3
Minnesota	44	6,220	141	.....	14	28	4,070	145	.....	3	3	72	10,290	143	.....	17	.....	.....
New York	313	51,141	163	.....	15	123	24,078	196	.....	5	38	436	75,219	173	.....	20	.....	.....
Ohio	789	180,579	229	1	117	246	54,376	221	.....	42	23	1,035	234,955	227	1	159	1	3
Pennsylvania	999	168,309	168	.....	93	280	55,307	198	1	21	61	1,279	223,616	175	1	114	.....	.....
South Dakota	89	17,152	193	.....	12	5	945	189	.....	6	4	94	18,097	192	.....	18	.....	.....
West Virginia	78	22,710	291	.....	3	10	2,825	283	.....	.....	4	88	25,535	290	.....	3	.....	.....
Wisconsin	110	14,248	130	.....	6	11	2,739	249	.....	1	13	121	16,987	140	.....	7	.....	.....
Not segregated	303	31,666	105	.....	8	33	3,346	101	.....	.....	19	336	35,012	104	.....	8	.....	.....
Total, 1921	3,090	550,953	178	1	293	838	167,357	200	2	81	194	3,928	718,310	183	3	374	2	6
Total, 1920	3,465	819,657	237	2	281	1,001	242,504	242	.....	75	163	4,466	1,062,161	238	2	356	1	4

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TABLE 14.—*Sandstone and bluestone quarries: Fatalities, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.															In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machine or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Arkansas																													0
Colorado																													0
Connecticut																													0
Kentucky																													0
Massachusetts																					1						1		1
Minnesota																													0
New York																													0
Ohio																													1
Pennsylvania															1	1						1						1	1
South Dakota																													0
West Virginia																													0
Wisconsin																													0
Not segregated																													0
Total, 1921															1	1					1	1						2	3
Total, 1920				1		1										2													2

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TABLE 15.—***Sandstone and bluestone quarries:*** *Injuries, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.															In outside works.										Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage	Falls of persons.	Falling objects (other than 1 and 2).	Fying objects	Electricity.	Drilling and channeling (by machine or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Arkansas	5	.....	1	....	.....	....	....	....	....	....	....	....	....	....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Colorado	1	.....	....	....	5	....	....	1	....	....	....	....	....	....	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
Connecticut	.....	1	....	....	.....	....	....	....	....	....	....	....	....	....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Kentucky	.....	.....	....	....	1	2	....	....	....	....	....	....	....	....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4
Massachusetts	.....	4	3	....	.....	1	....	....	....	....	....	....	....	....	.....	8	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2	10
Minnesota	.....	.....	....	1	.....	1	....	12	....	....	....	....	....	....	.....	14	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....	3	17
New York	.....	9	....	....	2	2	....	1	....	....	1	....	....	....	.....	15	.....	.....	1	.....	.....	1	.....	3	.....	.....	.....	5	20
Ohio	11	11	6	7	1	8	8	14	....	5	15	1	....	7	23	117	3	6	7	1	....	2	6	9	1	2	5	42	159
Pennsylvania	12	17	5	1	5	3	7	11	....	2	5	1	....	1	23	93	5	5	....	1	....	2	3	2	1	....	2	21	114
South Dakota	.....	.....	....	....	.....	....	6	4	....	....	....	....	....	....	2	12	.....	2	.....	.....	1	.....	.....	2	1	.....	.....	6	18
West Virginia	1	2	....	....	.....	....	....	....	....	....	....	....	....	....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
Wisconsin	1	4	....	....	1	....	....	....	....	....	....	....	....	....	.....	6	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	7
Not segregated	4	.....	....	2	.....	....	....	1	....	....	1	....	....	....	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8
Total, 1921	**35**	**48**	**15**	**11**	**15**	**17**	**21**	**44**	....	**7**	**22**	**2**	....	**8**	**48**	**293**	**9**	**13**	**10**	**2**	**1**	**5**	**11**	**17**	**4**	**2**	**7**	**81**	**374**
Total, 1920	**36**	**38**	**19**	**6**	**35**	**9**	**5**	**36**	**1**	**5**	**15**	**2**	....	....	**74**	**281**	**6**	**21**	**6**	**2**	....	**6**	**9**	**14**	**1**	....	**10**	**75**	**356**

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TABLE 16.—*Cement-rock, marble, slate, and trap-rock quarries: Men employed, number killed and injured, and days worked, by States, during the year ended December 31, 1921.*

State.	In and about quarry.					In outside work.					Total.							
	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Widows.	Orphans.
Cement rock:																		
California	423	142,766	338	3	154	1,636	562,042	344	2	263	11	2,059	704,808	342	5	417	5	4
Illinois	143	38,356	268	1	16	312	105,026	337	2	36	4	455	143,382	315	3	52	2	7
Kansas	121	30,967	256	.....	29	659	207,546	315	.....	201	7	780	238,513	306	.....	230	.....	.....
Missouri	541	147,547	273	.....	100	63	18,081	287	.....	51	3	604	165,628	274	.....	151	.....	.....
New York	221	48,338	219	1	27	561	97,045	173	1	183	6	782	145,383	186	2	210	.....	.....
Pennsylvania	943	264,647	281	1	213	1,608	456,994	284	1	212	14	2,551	721,641	283	2	425	1	2
Washington	91	23,916	263	.....	26	28	4,832	173	.....	5	3	119	28,748	242	.....	31	.....	.....
Not segregated	949	262,236	276	1	176	2,516	727,450	289	7	541	22	3,465	989,686	286	8	717	4	6
Total, 1921	**3,432**	**958,773**	**279**	**7**	**741**	**7,383**	**2,179,016**	**295**	**13**	**1,492**	**70**	**10,815**	**3,137,789**	**290**	**20**	**2,233**	**10**	**19**
Total, 1920	3,981	1,231,903	309	21	875	9,270	3,017,582	326	18	1,710	74	13,251	4,249,485	321	39	2,585	20	32
Marble:																		
Alabama	270	80,370	298	.....	41	125	37,500	300	.....	64	3	395	117,870	298	.....	105	.....	.....
California	38	12,528	330	1	3	2	600	300	.....	1	4	40	13,128	328	1	4	.....	.....
Georgia	285	81,734	287	.....	15	462	139,650	302	.....	42	4	747	221,384	296	.....	57	.....	.....
Massachusetts	53	15,764	297	.....	.....	60	16,585	276	.....	.....	5	113	32,349	286	.....	.....	.....	.....
Missouri	101	27,645	274	.....	25	63	19,255	306	.....	12	3	164	46,900	286	.....	37	.....	.....
New York	95	24,002	253	.....	3	20	6,060	303	.....	2	4	115	30,062	261	.....	5	.....	.....
Tennessee	596	141,422	237	1	36	85	8,675	102	.....	6	8	681	150,097	220	1	42	1	3
Vermont	579	154,445	267	3	41	1,576	406,838	258	1	108	6	2,155	561,283	260	4	149	2	1
Not segregated	121	31,034	256	.....	6	18	3,360	187	.....	1	8	139	34,394	247	.....	7	.....	.....
Total, 1921	**2,138**	**568,944**	**266**	**5**	**170**	**2,411**	**638,523**	**265**	**1**	**236**	**45**	**4,549**	**1,207,467**	**265**	**6**	**406**	**3**	**4**
Total 1920	1,635	452,645	277	.....	132	2,803	851,907	304	4	268	42	4,438	1,304,552	294	4	400	3	3
Slate:																		
New York	24	6,245	260	.....	.....	.....	.....	.....	.....	.....	3	24	6,245	260	.....	.....	.....	.....
Pennsylvania	1,392	342,534	246	1	172	610	156,428	256	.....	86	39	2,002	498,962	249	1	258	1	1
Vermont	813	162,789	200	1	95	53	14,700	277	.....	12	28	866	177,489	205	1	107	1	.....
Virginia	215	39,210	182	1	2	40	6,880	172	.....	.....	4	255	46,090	181	1	2	.....	.....
Not segregate	251	75,318	300	.....	11	166	50,292	303	1	7	6	417	125,610	301	1	18	.....	.....
Total, 1921	**2,695**	**626,096**	**232**	**3**	**280**	**869**	**228,300**	**263**	**1**	**105**	**80**	**3,564**	**854,396**	**240**	**14**	**385**	**2**	**1**
Total, 1920	2,597	765,325	295	4	224	899	243,915	271	.....	140	75	3,495	1,009,244	289	5	364	3	9

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Trap rock:																									
California	1,069	223,815	209	3	163	164	41,968	256	.....	43	53	1,233	265,783	216	3	206	.....	2
Connecticut	282	63,051	226	1	66	68	15,243	224	.....	20	7	350	78,897	225	1	86	.....	.....
Massachusetts	577	118,579	206	.....	87	294	61,806	207	.....	18	26	871	179,385	206	.....	105	.....	.....
New Jersey	794	185,898	234	.....	124	242	66,497	275	1	29	7	1,036	252,395	244	1	153	1	.....
New York	411	67,412	164	.....	90	176	47,050	267	1	12	4	587	114,462	195	2	102	2	6
Pennsylvania	509	93,080	183	3	78	291	68,991	237	1	36	21	800	162,071	203	4	114	3	4
Not segregated	303	67,178	222	.....	72	119	26,747	225	.....	41	11	422	98,925	223	.....	113	.....	.....
Total, 1921	**3,945**	**819,616**	**208**	**8**	**680**	**1,354**	**327,302**	**242**	**3**	**199**	**143**	**5,299**	**1,146,918**	**216**	**11**	**879**	**6**	**12**
Total, 1920	3,360	777,262	231	5	388	1,582	370,218	234	5	411	99	4,951	1,147,480	232	10	799	6	12

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TABLE 17.—***Cement-rock, marble, slate, and trap-rock quarries:*** *Fatalities, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.															In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage	Falls of persons.	Falling objects (other than 1 and 2.)	Flying objects	Electricity.	Drilling and channeling (by machines or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Cement Rock:																													
California	.....	.....	.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	3	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	2	5
Illinois	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	2	3
Kansas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Missouri	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
New York	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2
Pennsylvania	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2
Washington	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Not segregated	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	1	1	.....	.....	2	1	1	.....	.....	.....	1	7	8
Total, 1921	1	.....	.....	1	2	.....	.....	1	.....	.....	2	.....	.....	.....	.....	7	1	4	.....	.....	3	1	2	.....	.....	.....	2	13	20
Total, 1920	4	.....	.....	10	5	.....	.....	.....	.....	1	1	.....	.....	.....	.....	21	1	6	.....	.....	3	2	1	.....	1	1	3	18	39
Marble:																													
Alabama	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
California	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Georgia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Massachusetts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Missouri	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
New York	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Tennessee	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Vermont	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	3	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	4
Not segregated	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Total, 1921	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	5	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	6
Total, 1920	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	1	4	4

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TABLE 18.—*Cement-rock, marble, slate, and trap-rock quarries: Injuries, by causes and States, during the year ended December 31, 1921.*

State.	In and about quarry.																In outside works.												
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2).	Flying objects.	Electricity.	Drilling and channeling (by machine or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	Grand total.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
Cement rock:																													
California	24	8	9	11	31	19	15	8	....	6	10	1	....	1	11	154	15	33	18	7	3	38	45	39	....	26	39	263	417
Illinois	1	.....	....	2	5	1	3	....	....	1	....	....	....	....	3	16	2	5	2	3	5	2	1	4	....	5	7	36	52
Kansas	3	.....	3	....	6	1	....	1	....	4	4	2	....	1	4	29	8	24	29	24	2	13	26	42	....	13	20	201	230
Missouri	8	9	11	1	8	6	6	15	....	3	5	1	....	....	27	100	1	2	2	....	1	2	1	2	2	7	31	51	151
New York	1	.....	4	....	4	6	1	6	....	1	2	....	....	....	2	27	13	17	20	15	2	13	28	31	....	13	31	183	210
Pennsylvania	34	20	14	2	37	7	22	17	2	4	18	2	....	3	31	213	21	24	19	10	4	22	35	21	....	15	41	212	425
Washington	4	2	....	8	4	....	....	3	....	....	5	....	....	....	....	26	....	4	1	....	....	....	....	....	....	....	....	5	31
Not segregated	30	16	4	11	41	8	10	17	3	6	18	3	....	....	9	176	38	84	29	16	6	41	68	48	7	36	168	541	717
Total, 1921	**105**	**55**	**45**	**35**	**136**	**48**	**57**	**67**	**5**	**25**	**62**	**9**	....	**5**	**87**	**741**	**98**	**193**	**120**	**75**	**23**	**131**	**204**	**187**	**9**	**115**	**337**	**1,492**	**2,233**
Total, 1920	121	61	35	28	135	36	50	91	1	23	78	14	....	18	184	875	125	207	194	61	28	132	179	178	8	145	453	1,710	2,585
Marble:																													
Alabama	.....	.....	.....	....	.....	6	5	11	....	9	8	....	....	2	.....	41	3	6	4	4	1	2	4	5	29	3	3	64	105
California	1	.....	1	....	.....	....	....	....	....	1	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	1	1	4
Georgia	.....	.....	3	....	1	....	2	1	....	1	1	1	....	1	4	15	2	3	2	3	....	4	4	5	14	1	4	42	57
Massachusetts	.....	.....	.....	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0
Missouri	1	6	1	....	1	....	1	4	1	3	5	1	....	....	1	25	.....	.....	1	1	....	1	2	2	5	.....	.....	12	37
New York	.....	.....	.....	....	.....	1	....	1	....	1	....	....	....	....	....	3	.....	.....	.....	.....	.....	.....	.....	....	1	....	1	2	5
Tennessee	2	6	....	....	2	4	2	5	....	7	2	....	3	....	3	36	.....	1	.....	.....	.....	.....	1	....	4	.....	.....	6	42
Vermont	2	11	....	3	2	5	....	....	....	2	14	2	....	....	.....	41	.....	17	11	5	....	4	4	4	46	1	16	108	149
Not segregated	.....	.....	1	....	1	.....	.....	1	....	2	1	.....	.....	.....	.....	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	7
Total, 1921	**6**	**23**	**6**	**3**	**7**	**16**	**10**	**23**	**1**	**26**	**31**	**4**	**3**	**3**	**8**	**170**	**6**	**27**	**18**	**13**	**1**	**11**	**15**	**16**	**99**	**5**	**25**	**236**	**406**
Total, 1920	2	27	11	7	2	12	2	22	....	22	15	4	....	3	3	132	15	30	8	16	1	13	4	11	162	1	7	268	400

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ACCIDENTS BY PRINCIPAL CAUSES.

Table 19 compares the percentage of accidents from various causes in the quarries and at outside works. The table shows the percentage of fatalities by causes for the entire industry, the percentage of accidents inside the quarries, and the percentage of accidents outside of the quarries. The percentages of accidents inside and outside the quarries show more nearly the true hazard of each branch of the industry than those in the first column, based on the industry as a unit. However, the annual fluctuation in quarry hazards is even more accurately indicated in Table 20 which shows the number of accidents from any given cause based upon 1,000 full-time or 300-day workers. By this method of presentation, the injury rate from any given cause may be followed from year to year uninfluenced by the increase or decrease in other classes of accidents.

Particular attention is called to Tables 28, 29, and 30. The first two classify the accidents according to the degree of disability of the injured person, and Table 30 further segregates the different classes of accidents by the kind of quarry in which they occurred.

TABLE 19.—***All quarries:*** *Causes of fatalities and injuries, showing percentage due to each cause and corresponding rates per 1,000 300-day workers employed during the year ended December 31, 1921.*

Cause of accident.	Number killed.				Number injured			
	Per cent of total.		Per 1,000 300-day workers.		Per cent of total.		Per 1,000 300-day workers.	
	Grand total.	Class total.	Grand total.	Class total.	Grand total.	Class total.	Grand total.	Class total.
	1	2	3	4	5	6	7	8
In and about quarry:								
1. Falls or slides of rock or overburden	16.67	25.00	0.33	0.55	5.92	10.28	10.34	17.18
2. Handling rock at face	3.33	5.00	.07	.11	10.94	18.99	19.10	31.73
3. Timber or hand tools					2.30	4.00	4.02	6.68
4. Explosives	14.17	21.25	.28	.47	1.89	3.28	3.30	5.49
5. Haulage	10.00	15.00	.20	.33	5.29	9.19	9.24	15.35
6. Falls of persons	5.83	8.75	.12	.19	2.77	4.81	4.84	8.04
7. Falling objects (other than 1 and 2)	1.67	2.50	.03	.06	3.27	5.67	5.70	9.48
8. Flying objects	3.33	5.00	.07	.11	8.87	15.39	15.48	25.72
9. Electricity	1.67	2.50	.03	.06	.17	.30	.30	.50
10. Drilling and channelling (by machine or hand)	.83	1.25	.02	.03	2.26	3.92	3.93	6.54
11. Machinery	6.67	10.00	.13	.22	5.26	9.12	9.17	15.24
12. Nails, splinters, etc					1.13	1.96	1.97	3.27
13. Boiler and air-tank explosions	1.67	2.50	.03	.06	.04	.07	.07	.11
14. Burns					.95	1.66	1.67	2.77
15. Other causes	.83	1.25	.02	.03	6.55	11.36	11.42	18.99
Total	**66.67**	**100.00**	**1.33**	**2.22**	**57.61**	**100.00**	**100.55**	**167.09**
In outside works:								
16. Haulage	4.17	12.50	.08	.21	2.83	6.67	4.94	12.40
17. Machinery	8.33	25.00	.16	.42	5.52	13.03	9.64	24.21
18. Hand tools					3.43	8.09	5.99	15.04
19. Nails, splinters, etc					1.93	4.55	3.37	8.46
20. Electricity	5.83	17.50	.12	.29	.63	1.49	1.10	2.76
21. Falls of persons	3.33	10.00	.07	.17	3.32	7.82	5.79	14.53
22. Falling objects (rocks, timbers, etc.)	3.33	10.00	.07	.17	4.61	10.87	8.04	20.19
23. Flying objects					6.60	15.58	11.52	28.94
24. Handling rock by hand					2.59	6.11	4.52	11.35
25. Burns	3.33	10.00	.07	.17	2.43	5.73	4.24	10.64
26. Other causes	5.00	15.00	.10	.25	8.50	20.06	14.84	37.27
Total	**33.33**	**100.00**	**.67**	**1.68**	**42.39**	**100.00**	**73.99**	**185.79**
Grand total	**100.00**	.....	**2.00**	.....	**100.00**	.....	**174.54**	.....

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TABLE 20.—*All quarries: Number injured per 1,000 300-day workers, by causes, 1920 and 1921.*

Cause of accident.	Cement rock.		Granite.		Limestone.		Marble.		Sandstone and bluestone.		Slate.		Trap rock.		Total.	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
In and about quarry:																
1. Falls or slides of rock or overburden	29.469	32.854	10.064	6.679	13.155	16.707	1.325	3.163	13.177	19.063	12.936	14.854	19.683	32.577	14.074	17.183
2. Handling rock at face	14.856	17.209	18.560	13.359	25.085	37.604	17.893	12.124	13.909	26.144	20.384	27.312	19.683	63.690	21.593	31.733
3. Timber or hand tools	8.524	14.080	6.666	2.862	5.801	6.704	7.290	3.163	6.955	8.170	2.352	3.833	1.930	8.785	5.897	6.679
4. Explosives	6.819	10.951	3.268	4.198	5.393	5.290	4.639	1.581	2.196	5.991	1.176	2.396	5.017	7.687	4.691	5.488
5. Haulage	32.879	42.553	8.757	2.862	19.896	17.571	1.325	3.690	12.811	8.170	7.448	3.354	17.368	13.909	17.318	15.354
6. Falls of persons	8.768	15.019	6.796	5.153	6.619	8.170	7.952	8.435	3.294	9.259	2.352	2.396	7.333	7.687	6.489	8.037
7. Falling objects (other than 1 and 2)	12.177	17.835	5.489	5.344	11.766	9.322	1.325	5.272	1.830	11.438	5.880	5.750	6.561	13.177	9.185	9.479
8. Flying objects	22.163	20.964	24.049	35.115	19.161	24.720	14.579	12.124	13.177	23.965	6.272	10.062	33.964	42.826	19.861	25.719
9. Electricity	.243	1.564	.654	.382	.695	.471	.....	.527	.366	.....	.....	.....	.386	.366	.548	.499
10. Drilling and channeling (by machine or hand)	5.602	7.822	.614	4.771	5.229	6.023	14.579	13.706	1.830	3.873	1.960	3.354	9.263	11.347	4.976	6.541
11. Machinery	18.997	19.399	12.939	11.069	10.949	16.340	9.941	16.342	5.491	11.983	6.664	6.708	10.035	18.667	11.356	15.243
12. Nails, splinters, etc.	3.410	2.816	2.091	3.053	2.860	3.561	2.651	2.109	.732	1.089	1.568	6.708	1.158	1.830	2.477	3.270
13. Boiler and air-tank explosions	.....	.....	.....	.....	.....	.....	.....	1.581	.....	.....	.....	.....	.....	.366	.....	.111
14. Burns	4.384	1.564	1.046	2.671	2.410	3.090	1.988	1.581	.....	4.357	.....	.479	3.474	3.660	2.126	2.771
15. Other causes	44.812	27.222	11.894	8.588	17.649	17.702	1.988	4.217	27.087	26.144	18.817	46.958	13.894	22.328	19.028	18.985
Total	**213.103**	**231.852**	**114.887**	**106.107**	**146.668**	**173.301**	**87.475**	**89.615**	**102.855**	**159.586**	**87.809**	**134.164**	**149.749**	**248.902**	**139.619**	**167.092**
Number of 300-day workers in and about quarry	4,106	3,196	7,651	5,240	24,477	19,094	1,509	1,897	2,732	1,836	2,551	2,087	2,591	2,732	45,617	36,082
In outside works:																
16. Haulage	12.427	13.493	9.293	7.910	16.923	13.974	5.282	2.819	7.426	16.129	24.600	3.942	33.225	20.165	14.299	12.397
17. Machinery	20.579	26.573	22.237	14.689	23.613	27.074	10.563	12.688	25.990	23.298	35.671	17.083	44.571	24.748	22.528	24.209
18. Hand tools	19.286	16.522	9.293	16.384	9.603	16.109	2.817	8.459	7.426	17.921	13.530	3.942	51.864	11.915	13.758	15.036
19. Nails, splinters, etc.	6.064	10.326	9.957	6.780	4.565	7.666	5.634	6.109	2.475	3.584	7.380	18.397	4.052	6.416	5.656	8.460
20. Electricity	2.784	3.167	1.328	.....	2.046	3.493	.352	.470	.....	1.792	1.230	2.628	.810	2.750	1.938	2.764
21. Falls of persons	13.123	18.037	10.953	5.650	12.357	16.303	4.578	5.169	7.426	8.961	4.920	3.942	25.122	17.415	11.947	14.534
22. Falling objects (rocks, timbers, etc.)	17.795	28.087	15.599	12.994	15.742	19.893	1.408	7.049	11.139	19.713	4.920	7.884	63.209	16.499	16.554	20.188
23. Flying objects	17.695	25.747	52.439	106.215	17.474	23.872	3.873	7.519	17.327	30.466	11.070	10.513	51.053	26.581	20.812	28.941
24. Handling rock by hand	.795	1.239	13.940	25.424	3.148	6.890	57.042	46.523	1.237	7.168	49.201	47.306	10.535	6.416	9.723	11.350
25. Burns	14.415	15.834	1.659	2.260	7.713	11.839	.352	2.350	.....	3.584	2.460	1.314	12.966	4.583	8.484	10.638
26. Other causes	45.034	46.400	23.564	18.644	23.062	41.048	2.465	11.748	12.376	12.545	17.220	21.025	35.656	44.913	28.343	37.276
Total	**169.997**	**205.425**	**170.262**	**216.949**	**136.246**	**188.161**	**94.366**	**110.902**	**92.822**	**145.161**	**172.202**	**137.976**	**333.063**	**182.401**	**154.042**	**185.793**
Number of 300-day workers in outside works	10,059	7,263	3,013	1,770	12,705	10,305	2,840	2,128	808	558	813	761	1,234	1,091	31,472	23,876
Total injured (rate)	182.492	213.500	130.533	134.094	143.107	178.509	91.975	100.869	100.565	156.223	108.205	135.182	208.889	229.924	145.507	174.538
Total 300-day workers	14,165	10,459	10,664	7,010	37,182	29,399	4,349	4,025	3,540	2,394	3,364	2,848	3,825	3,823	77,089	59,958

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FALLS OR SLIDES OF ROCK.

Falls or slides of rock or overburden caused the third largest number of accidents among men working in the quarries; they resulted in 20 deaths and 620 injuries, or 17.74 accidents per thousand 300-day workers, as compared with 14.80 per thousand employees in the previous year. The number of accidents from falls of quarry material was exceeded by the number resulting from handling rock at face and from flying objects, the accident rates for which were 31.84 and 25.83, respectively, per thousand men employed inside the quarries.

EXPLOSIVES.

Among the hazards to which the quarry workers were exposed in 1921, the use of explosives ranked second in the number of resulting fatalities and tenth in the number of nonfatal injuries, thus indicating the large proportion of fatal accidents from this cause. Out of 215 accidents from explosives, 17 were fatal and 198 nonfatal, the accident rate being 5.96 per thousand employees (300-day basis) as compared with 5.48 per thousand in 1920. Most of the accidents from explosives resulted from premature shots, striking in loose rock, charging, and drilling into old holes, as indicated in Table 21.

TABLE 21.—*Fatalities and injuries due to* ***explosives*** *during the year ended December 31, 1921.*

Kind of quarry.	Transportation.	Charging.	Drilling into old holes.	Striking in loose rock.	Thawing.	Caps, detonators, etc.	Unguarded shots.	Returned too soon.	Premature shots.	Delayed blast.	Miscellaneous.	Total.
Killed:												
Cement rock											1	1
Granite									1			1
Limestone		1	2				1		3		3	10
Marble												0
Sandstone and bluestone												0
Slate												0
Trap rock									1		2	5
Total, 1921		3	2			1		5			6	17
Total, 1920		12	3	1		1	2	3	11	2	1	36
Total, 1919		3	2			2		3	8	2	4	24
Total, 1918		4	1				1	1	6		4	17
Total, 1917	4			1		1		1	10	(a)	4	21
Total, 1916		3	3		2			3	7	(a)	10	28
Injured:												
Cement rock		1		5		1		1	8	3	16	35
Granite	1	1	2					2	10	1	5	22
Limestone	4	9	5	10	1	3	1	3	12	4	49	101
Marble											3	3
Sandstone and bluestone	1			1					1		8	11
Slate			1					1			3	5
Trap rock		3	3	1					4		10	21
Total, 1921	6	14	11	17	1	4	1	7	35	8	94	198
Total, 1920	8	8	16	5	5	13	2	13	22	13	109	214
Total, 1919	9	17	14	8		4	7	18	24	1	65	167
Total, 1918	10	6	8	5	1	3	7	18	18	1	74	151
Total, 1917	8	10	12	25		17	7	30	18	(a)	144	271
Total, 1916	10	15	10	20	9	13	7	14	39	(a)	201	338

a Not segregated.

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HAULAGE.

Haulage accidents in 1921 resulted in 12 deaths and 554 injuries to men in the quarries and 5 deaths and 296 injuries to men employed at outside works. For the men in the pits the accident rate was 15.68 per thousand employees (300-day workers) as compared with 18.02 in the preceding year; for the men at the outside plants the rate was 12.61 as against 14.62 in 1920. These figures, Table 19, indicate that in 1921 haulage accidents ranked fourth as a cause of accidents to quarry employees and sixth to employees at outside works. Further details regarding haulage accidents are given in Table 22.

TABLE 22.—*Fatalities and injuries due to* ***haulage*** [a] *during the year ended December 31, 1921.*

Kind of quarry.	In and about quarry.				In outside works.				Grand total.
	Hand and animal.	Mechanical.	Railway cars and locomotives.	Total.	Hand and animal.	Mechanical.	Railway cars and locomotives.	Total.	
Killed:									
Cement rock	.....	.....	2	2	1	.....	.....	1	3
Granite	.....	1	2	3	.....	.....	.....	.....	3
Limestone	2	1	4	7	1	.....	3	4	11
Marble	.....	.....	.....	.....	.....	.....	.....	.....	0
Sandstone and bluestone	.....	.....	.....	.....	.....	.....	.....	.....	0
Slate	.....	.....	.....	.....	.....	.....	.....	.....	0
Trap rock	.....	.....	.....	.....	.....	.....	.....	.....	0
Total, 1921	**2**	**2**	**8**	**12**	**2**	.....	**3**	**5**	**17**
Total, 1920	5	6	21	32	1	1	8	10	42
Total, 1919	3	5	11	19	1	.....	8	9	28
Total, 1918	1	5	6	12	4	2	10	16	28
Total, 1917	2	3	10	15	1	3	9	13	28
Injured:									
Cement rock	25	40	71	136	39	17	42	98	234
Granite	5	7	3	15	8	3	3	14	29
Limestone	97	51	188	336	46	29	69	144	480
Marble	3	2	2	7	3	1	2	6	13
Sandstone and bluestone	9	.....	6	15	3	1	5	9	24
Slate	3	3	1	7	1	.....	2	3	10
Trap rock	8	16	14	38	6	1	15	22	60
Total, 1921	**150**	**119**	**285**	**554**	**106**	**52**	**138**	**296**	**850**
Total, 1920	234	157	399	790	180	76	194	450	1,240
Total, 1919	192	117	354	663	92	51	150	293	956
Total, 1918	206	128	342	676	84	38	110	232	908
Total, 1917	283	209	334	826	114	83	240	437	1,263

[a] Does not include "Handling rock at face."

MACHINERY.

Accidents caused by machinery resulted in 8 deaths and 550 injuries to men employed inside the quarries, and 10 deaths and 578 injuries to men at crushers and rock-dressing plants outside the quarries. Machinery thus ranked fifth as a cause of accidents inside the pits and second as a cause of accidents at outside plants. Inside the pits the accident rate, including fatal and nonfatal injuries, was 15.46 per thousand men employed (300-day workers); at the outside

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plants the rate was 24.63. For the preceding year these rates were 11.46 and 22.98, respectively.

Table 23 segregates the accidents due to machinery to show the causes thereof in greater detail.

TABLE 23.—*Fatalities and injuries due to* ***machinery*** *during the year ended December 31, 1921.*

Kind of quarry.	In and about quarry.						In outside works.						Grand total.
	Hoisting cables and attachments.	Guys, cranes, derricks, and attachments.	Pumps and hoisting engines.	Steam shovels.	Other machinery.	Total.	Hoisting cables and attachments.	Guys, cranes, derricks, and attachments.	Pumps and hoisting engines.	Crushers.	Other machinery.	Total.	
Killed:													
Cement rock	.....	.....	.....	2	.....	2	.....	.....	.....	.....	4	4	6
Granite	1	1	.....	.....	.....	2	.....	.....	.....	.....	2	2	4
Limestone	1	.....	.....	.....	2	3	.....	.....	.....	1	2	3	6
Marble	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Sandstone and bluestone	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Slate	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1
Trap rock	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	1
Total, 1921	**2**	**1**	.....	**3**	**2**	**8**	.....	.....	.....	**2**	**8**	**10**	**18**
Total, 1920	3	.....	.....	2	.....	5	.....	.....	.....	4	10	14	19
Total, 1919	3	3	1	2	3	12	.....	2	.....	2	3	7	19
Total, 1918	.....	3	1	1	3	8	2	2	.....	.....	5	9	17
Total, 1917	2	1	1	.....	1	5	.....	2	.....	2	6	10	15
Injured:													
Cement rock	6	7	2	29	18	62	11	6	.....	26	150	193	255
Granite	28	11	6	2	11	58	8	4	1	5	8	26	84
Limestone	47	43	9	92	121	312	28	21	15	45	170	279	591
Marble	15	4	5	.....	7	31	10	1	3	.....	13	27	58
Sandstone and bluestone	1	6	1	1	13	22	1	2	2	2	6	13	35
Slate	8	1	.....	.....	5	14	1	5	.....	.....	7	13	27
Trap rock	4	.....	1	12	34	51	.....	3	3	14	7	27	78
Total, 1921	**109**	**72**	**24**	**136**	**209**	**550**	**59**	**42**	**24**	**92**	**361**	**578**	**1,128**
Total, 1920	131	75	13	181	118	518	77	50	23	157	402	709	1,227
Total, 1919	105	95	16	137	148	501	57	41	28	80	317	523	1,024
Total, 1918	112	90	27	124	125	478	48	34	13	70	304	469	947
Total, 1917	120	92	54	184		450	83		.....	186	632	901	1,351

ACCIDENTS IN BUILDING-STONE QUARRIES AND CRUSHED-STONE QUARRIES.

The hazards to which quarrymen are exposed are not the same for all kinds of quarries. Much depends on whether the stone is being produced for structural purposes or whether it is to be crushed and used as a flux, or for making lime, or for road building. If the stone is to be used for monumental or structural purposes, much care in quarrying and handling must be exercised to prevent breakage, and a minimum amount of explosives used. On the other hand, if the stone is to be crushed, large quantities of explosives may be used and no care to prevent breakage in handling and hauling need be exercised.

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These facts indicate that accidents from falling quarry material, from handling rock, and from explosives should be more frequent at crushed-stone quarries than at building-stone quarries. This conclusion is proved by Table 27, which covers accidents at these two classes of quarries during the past five years, based on reports from operating companies. The table shows the relative frequency of accidents from different causes, based upon the number of men employed (calculated upon a standard of 300 work days per year). The injury rates from accidents that may be attributed to the lack of need to prevent breakage of stone, are consistently higher at the crushed-stone quarries.

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TABLE 24.—***Building-stone and crushed-stone quarries:*** *Men employed and number killed and injured at* ***selected quarries*** *during the year ended December 31, 1921.*

Kind of quarry.	In and about quarry.					In outside work.					Total.						Widows.	Orphans.
	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.	Active operators.	Men employed.	Days of labor performed.	Average days active.	Killed.	Injured.		
BUILDING STONE.																		
Granite	692	170,027	246	.....	36	600	153,472	256	.....	91	20	1,292	323,499	250	.....	127	.....	.....
Limestone	1,076	313,113	291	5	116	615	156,048	254	.....	137	9	1,691	469,161	277	5	253	4	15
Marble	859	234,623	273	3	106	1,746	458,041	262	1	181	8	2,605	692,664	266	4	287	1	1
Sandstone and bluestone	100	24,720	247	.....	.....	77	17,990	234	.....	7	5	177	42,710	241	.....	7	.....	.....
Total, 1921	**2,727**	**742,483**	**272**	**8**	**258**	**3,038**	**785 551**	**259**	**1**	**416**	**42**	**5,765**	**1 528,034**	**265**	**9**	**674**	**5**	**16**
Total, 1920	3,871	986,476	255	4	501	4,477	1,265,851	283	4	533	49	8,348	2,252,327	270	8	1,034	3	3
Total, 1919	2,968	839,354	283	6	383	4,001	1,167,224	292	3	426	42	6,969	2,006,578	288	9	809	4	10
Total, 1918	1,577	425,799	270	2	240	3,154	926,744	294	7	292	41	4,731	1,352,543	286	9	532	7	10
Total, 1917	4,158	1,155,900	278	4	734	3,928	1,145,751	292	2	588	70	8,086	2,301,651	285	6	1,322	5	12
CRUSHED STONE.																		
Granite	256	58,967	230	1	21	73	13,920	191	1	20	8	329	72,887	222	2	41	1	.....
Limestone	3,831	796,260	208	9	647	3,351	893,106	267	3	526	63	7,182	1,689,366	235	12	1,173	6	12
Sandstone and bluestone	167	25,893	155	.....	9	149	29,924	201	.....	8	8	316	55,817	177	.....	17	.....	.....
Total, 1921	**4,254**	**881,120**	**207**	**10**	**677**	**3,573**	**936 950**	**262**	**4**	**554**	**79**	**7 827**	**1,818,070**	**232**	**14**	**1,231**	**7**	**12**
Total, 1920	9,758	2,701,803	277	24	1,920	6,347	1,911,524	301	11	1,171	102	16,105	4,613,327	286	35	3,091	17	23
Total, 1919	5,697	1,487,611	261	21	1,192	5,356	1,468,031	274	7	829	86	11,053	2,955,642	267	28	2,021	17	29
Total, 1918	5,273	1,430,628	271	9	922	3,414	920,857	270	10	594	87	8,687	2,351,485	271	19	1,516	13	30
Total, 1917	7,825	2,164,349	277	15	1,395	3,840	1,081,065	282	5	1,071	112	11,665	3,245,414	278	20	2,466	12	22

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TABLE 25.—*Building-stone and crushed-stone quarries: Accident rates at selected quarries compared on a 300-day basis during the year ended December 31, 1921.*

Kind of quarry.	Number of 300-day workers.			Killed.						Injured.					
				In and about quarry.		In outside works.		Total.		In and about quarry.		In outside works.		Total.	
	In and about quarry.	In outside works.	Total.	Number.	Per 1,000 300-day workers.	Number.	Per 1,000 300-day workers.	Number.	Per 1,000 300-day workers.	Number.	Per 1,000 300-day workers.	Number.	Per 1,000 300-day workers.	Number.	Per 1,000 300-day workers.
BUILDING STONE.															
Granite	567	511	1,078							36	63.49	91	178.08	127	117.81
Limestone	1,044	520	1,564	5	4.79			5	3.20	116	111.11	137	263.46	253	161.76
Marble	782	1,527	2,309	3	3.84	1	0.65	4	1.73	106	135.55	181	118.53	287	124.30
Sandstone and bluestone	82	60	142									7	116.67	7	49.30
Total, 1921	**2,475**	**2,618**	**5,093**	**8**	**3.23**	**1**	**.38**	**9**	**1.77**	**258**	**104.24**	**416**	**158.90**	**674**	**132.34**
Total, 1920	3,288	4,220	7,508	4	1.22	4	.95	8	1.07	501	152.37	533	126.30	1,034	137.72
Total, 1919	2,797	3,891	6,688	6	2.15	3	.77	9	1.35	383	136.93	426	109.48	809	120.96
Total, 1918	1,419	3,089	4,508	2	1.41	7	2.27	9	2.00	240	169.13	292	94.53	532	118.01
Total, 1917	3,853	3,819	7,672	4	1.04	2	.52	6	.78	734	190.50	588	153.96	1,322	172.31
CRUSHED STONE.															
Granite	197	46	243	1	5.08	1	21.74	2	8.23	21	106.60	20	434.78	41	168.72
Limestone	2,654	2,977	5,631	9	3.39	3	1.01	12	2.13	647	243.78	526	176.69	1,173	208.31
Sandstone and bluestone	86	100	186							9	104.65	8	80.00	17	91.40
Total, 1921	**2,937**	**3,123**	**6,060**	**10**	**3.40**	**4**	**1.28**	**14**	**2.31**	**677**	**230.51**	**554**	**177.39**	**1,231**	**203.14**
Total, 1920	9,006	6,372	15,378	24	2.66	11	1.73	35	2.28	1,920	213.19	1,171	183.77	3,091	201.00
Total, 1919	4,959	4,893	9,852	21	4.23	7	1.43	28	2.84	1,192	240.37	829	169.43	2,021	205.14
Total, 1918	4,769	3,070	7,839	9	1.89	10	3.26	19	2.42	922	193.33	594	193.49	1,516	193.39
Total, 1917	7,215	3,603	10,818	15	2.08	5	1.39	20	1.85	1,395	193.35	1,071	297.25	2,466	227.95

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TABLE 26.—***Building-stone and crushed-stone quarries:*** *Fatalities and injuries at* ***selected quarries*** *by causes, during the year ended December 31, 1921.*

Kind of quarry.	In and about quarry.															In outside works.											Grand total.
	Falls or slides of rock or overburden.	Handling rock at face.	Timber or hand tools.	Explosives.	Haulage.	Falls of persons.	Falling objects (other than 1 and 2.)	Flying objects.	Electricity.	Drilling and channeling (by machines or hand).	Machinery.	Nails, splinters, etc.	Boiler and air-tank explosions.	Burns.	Other causes.	Total.	Haulage.	Machinery.	Hand tools.	Nails, splinters, etc.	Electricity.	Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.	Handling rock by hand.	Burns.	Other causes.	Total.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21	22	23	24	25	26		
KILLED.																													
Building stone:																													
Granite					1	2	1	1								5													0
Limestone																													5
Marble	1												2			3						1						1	4
Sandstone and bluestone																													0
Total, 1921	1				1	2	1	1					2			8						1						1	9
Total, 1920		1			1	1									1	4	1	2									1	4	8
Total, 1919				2		1	1				2					6	1	1						1				3	9
Total, 1918											1	1				2	3	1				1	1				1	7	9
Total, 1917						2		1		1						4	1	1										2	6
INJURED.																													
Granite	3	4	5	2		3		5		1	3	3			7	36	3	3				10	3	70	9		3	91	137
Limestone	4	8	6		7	11	9	19		5	24	6		2	15	116	1	25	13	6	2	10	13	25	7	2	33	137	253
Marble	4	14	4	3	3	12	6	16	1	12	25	3		2	1	106	3	23	16	10	1	7	10	11	77	4	19	181	287
Sandstone and bluestone																		2				1		2	1		1	7	7
Total, 1921	11	26	15	5	10	26	15	40	1	18	52	12		4	23	258	7	53	29	16	3	18	26	108	94	6	56	416	674
Total, 1920	20	95	22	14	11	37	35	96	1	32	60	9		6	63	501	17	56	19	26	2	27	42	117	176	5	46	533	1,034
Total, 1919	15	46	7	18	12	31	26	83	11	21	48	6		8	51	383	27	43	17	13	2	28	32	84	156	3	21	426	809
Total, 1918	10	44	11	7	1	14	13	57	2	7	31	1		1	41	240	9	31	10	11	2	24	22	56	100	1	26	292	532
Total, 1917	24	154	65	15	20	36		121		82	85	9			122	734	24	85	50	24	3	31	52	112	118	7	82	588	1,322

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KILLED.

Crushed stone:																														
Granite					1										1								1					1	2
Limestone	1	1		2	2	1			1		1				9	2	1											3	12
Sandstone and bluestone																													0
Total, 1921	**1**	**1**		**2**	**3**	**1**			**1**		**1**				**10**	**2**	**1**						**1**					**4**	**14**
Total, 1920	4	1		5	10				1	1	2				24	4	2	1		1	1	2						11	35
Total, 1919	5	2		1	7	1		1	1	1	2				21	2	1			1		1				2	7	28
Total, 1918	2			2	2	2					1				9	5	2				1	1				1	10	19
Total, 1917	4			3	5	1				1				1	15	3	1				1						5	20

INJURED.

Granite		2		2	2		2	6			3	1		3		21		5		1		1	6	5	1		1	20	41
Limestone	40	71	29	25	85	27	55	62	2	28	99	14		25	85	647	47	74	41	29	8	56	59	57	15	38	102	526	1,173
Sandstone and bluestone	3	1		1	1	1					1				1	9		2				1	2	2		1		8	17
Total, 1921	**43**	**74**	**29**	**28**	**88**	**28**	**57**	**68**	**2**	**28**	**103**	**15**		**28**	**86**	**677**	**47**	**81**	**41**	**30**	**8**	**58**	**67**	**64**	**16**	**39**	**103**	**554**	**1,231**
Total, 1920	120	262	68	43	302	98	210	242	12	89	158	21		47	248	1,920	115	206	87	43	22	117	150	145	19	65	202	1,171	3,091
Total, 1919	113	188	41	18	170	68	77	186	15	60	117	13		26	100	1,922	86	169	76	38	15	68	104	97	14	44	118	829	2,021
Total, 1918	39	101	30	29	138	50	75	109	4	43	96	12		22	174	922	62	129	37	12	4	52	61	57	18	37	125	594	1,516
Total, 1917	195	274	84	56	207	38		214	1	53	112	8	1		152	1,395	109	185	89	35	12	85	107	139	56	71	183	1071	2,466

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TABLE 27.—***Building-stone and crushed-stone quarries:*** *Injury rates, by causes, at* ***selected quarries*** *compared on a 300-day basis, 1917 to 1921.*

Cause.	Building stone.					Crushed stone.				
	1917	1918	1919	1920	1921	1917	1918	1919	1920	1921
In and about quarry:										
1. Falls or slides of rock or overburden	6.23	7.05	5.36	6.08	4.44	27.03	8.18	22.79	13.33	14.64
2. Handling rock at face	39.97	31.01	16.45	28.89	10.51	37.98	21.18	37.91	29.09	25.20
3. Timber or hand tools	16.87	7.75	2.50	6.69	6.06	11.64	6.29	8.27	7.55	9.88
4. Explosives	3.89	4.93	6.44	4.26	2.02	7.76	6.08	3.63	4.78	9.53
5. Haulage	5.19	.70	4.29	3.25	4.04	28.69	28.94	34.28	33.53	29.97
6. Falls of persons	9.34	9.87	11.08	11.25	10.51	5.27	10.48	13.71	10.88	9.53
7. Falling objects (other than 1 and 2)	.....	9.16	9.30	10.65	6.06	.....	15.73	15.53	23.32	19.41
8. Flying objects	31.41	40.17	29.67	29.20	16.16	29.66	22.85	37.51	26.87	23.15
9. Electricity	.....	1.41	3.93	.30	.40	.14	.84	3.02	1.33	.68
10. Drilling and channeling (by machine or hand)	21.28	4.93	7.51	9.73	7.27	7.34	9.02	12.10	9.88	9.53
11. Machinery	22.32	21.85	17.16	18.25	21.01	15.52	20.13	23.59	17.54	35.07
12. Nails, splinters, etc	2.34	.70	2.15	2.74	4.85	1.11	2.52	2.62	2.33	5.11
13. Boiler and air-tank explosions	.....	.....	.....	.....	.....	.14	.....	.....	.....	.....
14. Burns	.....	.70	2.86	1.82	1.62	.....	4.61	5.24	5.22	9.53
15. Other causes	31.66	28.90	18.23	19.16	9.29	21.07	36.48	20.17	27.54	29.28
Total injured in and about quarry	190.50	169.13	136.93	152.37	104.24	193.35	193.33	240.37	213.19	230.51
Number of 300-day workers in and about quarry	3,853	1,419	2,797	3,288	2,475	7,215	4,769	4,959	9,006	2,937
In outside works:										
16. Haulage	6.28	2.91	6.94	4.03	2.67	30.25	20.20	17.58	18.05	15.05
17. Machinery	22.26	10.04	11.05	13.27	20.24	51.35	42.02	34.54	32.33	25.94
18. Hand tools	13.09	3.24	4.37	4.50	11.08	24.70	12.05	15.53	13.65	13.13
19. Nails, splinters, etc	6.28	3.56	3.34	6.16	6.11	9.71	3.91	7.77	6.75	9.61
20. Electricity	.78	.65	.51	.47	1.15	3.33	1.30	3.07	3.45	2.51
21. Falls of persons	8.12	7.77	7.20	6.40	6.88	23.59	16.94	13.90	18.36	18.57
22. Falling objects (rocks, timbers, etc)	13.62	7.12	8.22	9.95	9.93	29.70	19.87	21.35	23.54	21.45
23. Flying objects	29.33	18.13	21.59	27.73	41.25	38.58	18.57	19.82	22.76	20.49
24. Handling rock by hand	30.90	32.37	40.09	41.71	35.91	15.54	5.86	2.86	2.98	5.12
25. Burns	1.83	.32	.77	1.18	2.29	19.71	12.05	8.99	10.20	12.49
26. Other causes	21.47	8.42	5.40	10.90	21.39	50.79	40.72	24.12	31.70	32.98
Total injured in outside works	153.96	94.53	109.48	126.30	158.90	297.25	193.49	169.43	183.77	177.39
Number of 300-day workers in outside works	3,819	3,089	3,891	4,220	2,618	3,603	3,070	4,893	6,372	3,123
Grand total injured	**172.31**	**118.01**	**120.96**	**137.72**	**132.34**	**227.95**	**193.39**	**205.14**	**201.60**	**203.14**
Grand total 300-day workers	**7,672**	**4,508**	**6,688**	**7,508**	**5,093**	**10,818**	**7,839**	**9,852**	**15,378**	**6,060**

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TABLE 28.—***All quarries:*** *Injuries, classified by States and character of disability, during the year ended December 31, 1921.*

State.	Fatal.	Nonfatal injuries.				
		Permanent disability.		Temporary disability.[c]	Slight.[d]	Total nonfatal.
		Total.[a]	Partial.[b]			
Alabama	1		19	15	338	372
Arizona					1	1
Arkansas	2			1	9	10
California	12		20	193	459	672
Colorado	2		3	18	42	63
Connecticut	1		4	16	76	96
Florida					2	2
Georgia	2		6	9	71	86
Idaho	1		3	4	13	20
Illinois	5	1	11	87	411	510
Indiana	8		25	103	466	594
Iowa	1		5	6	83	94
Kansas			3	36	220	259
Kentucky	4		1	16	130	147
Maine		1	7	34	104	146
Maryland	3		10	36	156	202
Massachusetts	4		8	60	346	414
Michigan	7		4	59	432	495
Minnesota			7	27	148	182
Missouri			8	21	386	415
Montana		1	2	7	11	21
Nebraska				2	2	4
New Hampshire	1		1	10	86	97
New Jersey	2		13	64	279	358
New Mexico				1	20	21
New York	6		22	151	648	821
North Carolina	5		5	2	34	41
Ohio	10		34	156	526	716
Oklahoma	1	1	4	33	39	77
Oregon				2	3	5
Pennsylvania	16	4	47	434	1,413	1,898
Rhode Island				3	18	21
South Dakota	3		3	1	20	24
Tennessee	5		5	6	180	191
Texas	2		11	47	253	311
Utah	2		1	18	31	50
Vermont	7	1	13	94	246	354
Virginia	2		6	26	99	131
Washington	1		3	3	43	49
West Virginia	2		6	37	114	157
Wisconsin	1		7	53	225	285
Wyoming				2	1	3
Not segregated	1		3	3	46	52
Total, 1921	120	9	330	1,896	8,230	10,465
Total, 1920	178	10	327	1,893	8,987	11,217

[a] *Permanent total disability.*—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating workmen from doing any work of a gainful occupation.

[b] *Permanent partial disability.*—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

[c] Time lost, more than 14 days.

[d] Time lost, 1 to 14 days.

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TABLE 29.—*All quarries: Injuries, classified by character of disability, during the year ended December 31, 1921.*

Cause.	Fatal.	Nonfatal injuries.				
		Permanent disability.		Temporary disability.[c]	Slight.[d]	Total nonfatal.
		Total.[a]	Partial.[b]			
1. Falls or slides of rock or overburden	20	3	27	154	436	620
2. Handling rock at face	4	1	30	252	862	1,145
3. Timber or hand tools			4	45	192	241
4. Explosives:						
(a) Transportation				2	4	6
(b) Charging	3	1	3	5	5	14
(c) Drilling into old holes	2		4	2	5	11
(d) Striking in loose rocks		1		2	14	17
(e) Thawing				1		1
(f) Caps, detonators, etc			1		3	4
(g) Unguarded shots	1				1	1
(h) Returned too soon			2	3	2	7
(i) Premature shots	5		9	12	14	35
(j) Delayed blast			2	1	5	8
(k) Miscellaneous	6		5	20	69	94
5. Haulage:						
(a) Hand and animal	2	1	8	39	102	150
(b) Mechanical	2		5	34	80	119
(c) Railway cars and locomotives	8		18	82	185	285
6. Falls of persons:						
(a) Falling into quarry from surface, benches or face	3		4	47	128	179
(b) Falling from hoists, derricks, ladders, etc.	4	1	8	27	75	111
7. Falling objects (other than 1 and 2)	2		12	69	261	342
8. Flying objects:						
(a) From sledging	2		26	44	549	619
(b) Others	2	1	9	21	278	309
9. Electricity:						
(a) Direct contact with trolley wire				1	1	2
(b) Bar or tool striking trolley wire					1	1
(c) Contact with motor				1	1	2
(d) Others	2			5	8	13
10. Drilling and channeling (by machine or hand)	1		11	36	189	236
11. Machinery:						
(a) Hoisting cables and attachments	2		6	25	78	109
(b) Guys, cranes, derricks and attachments	1		2	16	54	72
(c) Pumps and hoisting engines				4	20	24
(d) Steam shovels	3		8	23	105	136
(e) Other machinery	2		7	31	171	209
12. Nails, splinters, etc			1	8	109	118
13. Boiler and air-tank explosions	2				4	4
14. Burns			1	17	82	100
15. Other causes	1		24	112	549	685
Total, in and about quarry	80	9	237	1,141	4,642	6,029
16. Haulage:						
(a) Hand and animal	2		1	19	86	106
(b) Mechanical				16	36	52
(c) Railway cars and locomotives	3		6	40	92	138

[a] *Permanent total disability.*—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating workmen from doing any work of a gainful occupation.

[b] *Permanent partial disability.*—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

[c] Time lost, more than 14 days.

[d] Time lost, 1 to 14 days.

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TABLE 29.—***All quarries:*** *Injuries, classified by character of disability, during the year ended December 31, 1921*—Continued.

Cause.	Fatal.	Nonfatal injuries.				
		Permanent disability.		Temporary disability.	Slight.	Total nonfatal.
		Total.	Partial.			
17. Machinery:						
(a) Hoisting cables and attachments	.....	.....	3	15	41	59
(b) Guys, cranes, derricks, and attachments	.....	.....	4	8	30	42
(c) Pumps and hoisting engines	.....	.....	.....	5	19	24
(d) Crushers	2	.....	6	15	71	92
(e) Other machinery	8	.....	19	82	260	361
18. Hand tools	.....	.....	3	55	301	359
19. Nails, splinters, etc	.....	.....	.....	21	181	202
20. Electricity:						
(a) Direct contact with trolley wire	.....	.....	.....	.....	5	5
(b) Bar or tool striking trolley wire	2	.....	.....	.....	2	2
(c) Contact with motor	2	.....	2	2	7	11
(d) Others	3	.....	.....	14	34	48
21. Falls of persons	4	.....	3	95	249	347
22. Falling objects (rocks, timbers, etc.)	4	.....	9	89	384	482
23. Flying objects:						
(a) From sledging	.....	.....	9	12	181	202
(b) From crushing	.....	.....	3	1	66	70
(c) Others	.....	.....	5	24	390	419
24. Handling rock by hand	.....	.....	8	47	216	271
25. Burns	4	.....	1	67	186	254
26. Other causes	6	.....	11	128	751	890
Total, in outside works	**40**	.....	**93**	**755**	**3,588**	**4,436**
Grand total	**120**	**9**	**330**	**1,896**	**8,230**	**10,465**

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TABLE 30.—*All quarries: Injuries, classified by kind of quarry and character of disability, during the year ended December 31, 1921.*

IN AND ABOUT QUARRY.

Character of disability.	Falls or slides of rock or overburden.	1	Handling rock at face.	2	Timber or hand tools.	3	Explosives.	4	Haulage.	5	Falls of persons.	6	Falling objects.	8	Electricity.	9	Falling tools (other than 1 and 2).	7	Drilling and channeling (by machine or hand).	10	Machinery.	11	Nails, splinters, etc.	12	Boiler and air-tank explosions.	13	Burns.	14	Other causes.	15	Total.
							(a) Transportation.		(a) Hand and animal.		(a) Falling into quarry from surface, benches, or face.		(a) From sledging.		(a) Direct contact with trolley wire.						(a) Hoisting cables and attachments.									
							(b) Charging.		(b) Mechanical.		(b) Falling form hoists, derricks, ladders, etc.		(b) Others.		(b) Bar or tool striking trolley wire.						(b) Guys, cranes, derricks, and attachments.									
							(c) Drilling into old holes.		(c) Railway cars and locomotives.						(c) Contact with motor.						(c) Pumps and hoisting engines.									
							(d) Striking in loose rock.								(d) Others.						(d) Steam shovels.									
							(e) Thawing.														(e) Other machinery.									
							(f) Caps, detonators, etc.																							
							(g) Unguarded shots.																							
							(h) Returned too soon.																							
							(i) Premature shots.																							
							(j) Delayed blast.																							
							(k) Miscellaneous.																							
Total: a																														
Cement rock									1																				1	
Granite				1			1		1		1		1																5	
Limestone							1																							
Marble																														
Sandstone and bluestone		2																											2	
Slate																														
Trap rock		1																											1	
Total		3		1			1		1		1		1																9	

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Partial: [b]																																					
Cement rock	2	1	1						1			2			1	1	2			1									1	1		2		1			3	20
Granite	7	1			1	1						4			1	1	3	1														1	1			3	27
Limestone	14	15	1		1	2				1		2	3	4	3	13	1	6	4	19	4								4	1	1		2	3			1	5	110
Marble																	1			2									1									4
Sandstone and bluestone	2	4											1	1				1	2	1									1				1	2			10	26
Slate	2	3	1						1					1						1									2	4							2	17
Trap rock		6	1		1	1						3		1	1	1	2	1		2	2	5							2				2	1			1	33
Total	27	30	4		3	4			1		2	9	2	5	8	5	18	4	8	12	26	9							11	6	2		8	7	1		1	24	237
Temporary: [c]																																					
Cement rock	28	11	4		1						1	3	1	6	8	14	21	9	6	11	1	4	1		1	2	2	1		1	4	3	2			10	156
Granite	11	13	4								1	2		1	1			5	3	3	2	4				1	3	5	4			1	1		2	5	72
Limestone	61	119	23	2	3		1	1			1	5		11	27	14	54	23	12	48	31	10				2	19	9	10	2	18	11	4		12	60	593
Marble	2	6														1		4									6	5				2				2	28
Sandstone and bluestone	8	12	1				1					1		2			2	1	1											1	1		1			1	9	42
Slate	7	18	2			1												1	1	2	5	1					1	3	1							17	61
Trap rock	37	73	11		1	1						1			2	5	5	4	4	5	5	2					5	2			1	13	1		2	9	189
Total	154	252	45	2	5	2	2	1			3	12	1	20	39	34	82	47	27	69	44	21	1		1	5	36	25	16	4	23	31	8		17	112	1,141
Slight: [d]																																					
Cement rock	75	43	40				5					3	2	10	15	25	48	16	17	45	18	44			1		23	4	6	1	23	15	6		5	74	564
Granite	17	56	11	1		1				1	4	1	4	4	7	2	12	5	25	145	32				1		21	23	7	6	1	9	15		12	37	457
Limestone	244	583	104	2	4	3	8		3	1	1	7	2	35	60	34	121	71	42	126	260	147	1	1		5	92	37	32	7	72	107	64		46	273	2,601
Marble	4	17	6											3	3	1	2	10	1	10	16	3				1	19	10	4	5		5	4	3	3	6	138
Sandstone and bluestone	25	32	14	1										5	8		4	9	5	19	31	12					6	1		5		10	2		7	29	225
Slate	20	36	5											3	1	3	1	3		10	6	8					4	1				5	14		1	79	200
Trap rock	51	95	12		1	1	1							9	5	10	7	7	5	29	73	30				1	24	2		1	7	20	4	1	8	51	457
Total	436	862	192	4	5	5	14		3	1	2	14	5	69	102	80	185	128	75	261	549	278	1	1	1	8	189	78	54	20	105	171	109	4	82	549	4,642
All quarries:																																					
Total	3	1			1		1							1				1		1																	9
Partial	27	30	4		3	4			1		2	9	2	5	8	5	18	4	8	12	26	9					11	6	2		8	7	1		1	24	237
Temporary	154	252	45	2	5	2	2	1			3	12	1	20	39	34	82	47	27	69	44	21	1		1	5	36	25	16	4	23	31	8		17	112	1,141
Slight	436	862	192	4	5	5	14		3	1	2	14	5	69	102	80	185	128	75	261	549	278	1	1	1	8	189	78	54	20	105	171	109	4	82	549	4,642
Total	620	1,145	241	6	14	11	17	1	4	1	7	35	8	94	150	119	285	179	111	342	619	309	2	1	2	13	236	109	72	24	136	209	118	4	100	685	6,029

[a] *Permanent total disability.*—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating workman from doing any work of a gainful occupation.

[b] *Permanent partial disability.*—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

[c] Time lost, more than 14 days.

[d] Time lost, 1 to 14 days.

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TABLE 30.—***All quarries:*** *Injuries, classified by kind of quarry and character of disability, during the year ended December 31, 1921*—Continued.

Character of disability.	IN OUTSIDE WORKS.																						Grand total.
	Haulage.			Machinery.					Hand tools.	Nails, splinters, etc.	Electricity.				Falls of persons.	Falling objects (rocks, timbers, etc.).	Flying objects.			Handling rock by hand.	Burns.	Other causes.	Total.	
	(a) Hand and animal.	(b) Mechanical.	(c) Railway cars and locomotives.	(a) Hoisting cables and attachments.	(b) Guys, cranes, derricks, and attachments.	(c) Pumps and hoisting engines.	(d) Crushers.	(e) Other machinery.			(a) Direct contact with trolley wire.	(b) Bar or tool striking trolley wire.	(c) Contact with motor.	(d) Others.			(a) From sledging.	(b) From crushing.	(c) Others.					
	16			17					18	19	20				21	22	23			24	25	26		
Total:[a]																								
Cement rock																								1
Granite																								10
Limestone																								5
Marble																								0
Sandstone and bluestone																								0
Slate																								2
Trap rock																								1
Total																								9
Partial:[b]																								
Cement rock			3	1			1	6	2				1		1			1				3	19	39
Granite															2	1	3			2	1	1	10	37
Limestone	1		1	1	2		4	9	1				1			2	4		3	1		5	35	145
Marble			1	1				2								1				2		1	8	12
Sandstone and bluestone					2		1	2								2			1	2			10	36
Slate																1				1		1	3	20
Trap rock			1													2	2	2	1				8	41
Total	1		6	3	4		6	19	3				2		3	9	9	3	5	8	1	11	93	330

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Temporary: [c]																							
Cement rock	7	4	14	5	2	.....	5	33	18	11	.....	.....	1	3	3	33	4	.....	8	5	47	47	280	436
Granite	1	1	2	.....	.....	.....	1	3	4	.....	.....	.....	.....	.....	3	1	1	.....	2	4	.....	4	27	99
Limestone	8	10	17	10	4	4	5	35	19	8	.....	.....	1	10	47	44	4	1	11	11	20	65	334	927
Marble	.....	1	.....	.....	.....	1	.....	6	6	1	.....	.....	.....	.....	4	4	2	.....	2	20	.....	5	52	80
Sandstone and bluestone	2	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	2	4	.....	.....	1	.....	.....	.....	12	54
Slate	.....	.....	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	5	.....	.....	9	70
Trap rock	1	.....	6	.....	2	.....	4	3	6	.....	.....	.....	.....	1	6	3	.....	.....	.....	2	.....	7	41	230
Total	**19**	**16**	**40**	**15**	**8**	**5**	**15**	**82**	**55**	**21**	.....	.....	**2**	**14**	**95**	**89**	**12**	**1**	**24**	**47**	**67**	**128**	**755**	**1,896**
Slight: [d]																								
Cement rock	32	13	25	5	4	.....	20	111	100	64	3	1	2	12	97	171	17	3	154	4	68	287	1,193	1,757
Granite	7	2	1	8	4	1	4	5	25	12	.....	.....	.....	.....	5	21	102	27	53	39	3	28	347	804
Limestone	37	19	51	17	15	11	36	126	146	71	2	1	5	16	121	159	41	23	159	59	102	353	1,570	4,171
Marble	3	.....	1	9	1	2	.....	5	12	12	.....	.....	.....	1	7	10	4	1	7	77	5	19	176	314
Sandstone and bluestone	1	1	5	1	.....	2	1	3	9	1	.....	.....	.....	1	3	5	6	1	8	2	2	7	59	284
Slate	1	.....	1	1	5	.....	.....	6	2	14	.....	.....	.....	2	3	5	4	1	2	30	1	15	93	293
Trap rock	5	1	8	.....	1	3	10	4	7	7	.....	.....	.....	2	13	13	7	10	7	5	5	42	150	607
Total	**86**	**36**	**92**	**41**	**30**	**19**	**71**	**260**	**301**	**181**	**5**	**2**	**7**	**34**	**249**	**384**	**181**	**66**	**390**	**216**	**186**	**751**	**3,588**	**8,230**
All quarries:																								
Total	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Partial	1	.....	6	3	4	.....	6	19	3	.....	.....	.....	2	.....	3	9	9	3	5	8	1	11	93	330
Temporary	19	16	40	15	8	5	15	82	55	21	.....	.....	2	14	95	89	12	1	24	47	67	128	755	1,896
Slight	86	36	92	41	30	19	71	260	301	181	5	2	7	34	249	384	181	66	390	216	186	751	3,588	8,230
Total	**106**	**52**	**138**	**59**	**42**	**24**	**92**	**361**	**359**	**202**	**5**	**2**	**11**	**48**	**347**	**482**	**202**	**70**	**419**	**271**	**254**	**890**	**4,436**	**10,465**

[a] *Permanent total disability.*—Loss of both legs or arms, one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating workman from doing any work of a gainful occupation.

[b] *Permanent partial disability.*—Loss of one foot, leg, hand, eye, one or more fingers, one or more toes, any dislocation where ligaments are severed, or any other injury known in surgery to be permanent partial disability.

[c] Time lost, more than 14 days.

[d] Time lost, 1 to 14 days.

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QUARRY AND MINE ACCIDENTS COMPARED.

Table 31 shows the number of men employed and number killed in the quarries and in the coal and metal mines of the United States during the 10-year period 1911 to 1921; the fatality rate is based on the actual number of men employed and the actual time worked. The table compares the industries on the equal 300-day basis.

Table 32 shows the percenatge of fatalities by principal causes, for comparative purposes, in quarries, metal mines, and coal mines.

TABLE 31.—***Quarries, metal mines, and coal mines:*** *Comparative statement of fatality rates based on actual number of men employed and the equivalent in 300-day workers, by years, 1911 to 1921.*

Year.	Quarries.					Metal mines.				
	Number employed.		Killed.	Number killed per 1,000 employed.		Number employed.		Killed.	Number killed per 1,000 employed.	
	Actual number.	Equivalent in 300-day workers.		Actual time basis.	300-day basis.	Actual number.	Equivalent in 300-day workers.		Actual time basis.	300-day basis.
1911	110,954	84,417	188	1.69	2.23	165,979	156,089	695	4.19	4.45
1912	113,105	93,837	213	1.88	2.27	169,199	161,662	661	3.91	4.09
1913	106,278	87,141	183	1.72	2.10	191,276	183,593	683	3.57	3.72
1914	87,936	68,187	180	2.05	2.64	158,115	142,619	559	3.54	3.92
1915	100,740	82,447	148	1.47	1.80	152,118	141,997	553	3.64	3.89
1916	90,797	76,457	173	1.91	2.26	204,685	192,455	697	3.41	3.62
1917	82,290	71,525	131	1.59	1.83	200,579	192,085	852	4.25	4.44
1918	68,332	59,285	125	1.83	2.11	182,606	181,006	646	3.54	3.57
1919	75,505	63,794	123	1.63	1.93	145,262	134,871	468	3.22	3.47
1920	86,488	77,089	178	2.06	2.31	136,583	134,540	425	3.11	3.16
1921	**77,185**	**59,958**	**120**	**1.55**	**2.00**	**93,929**	**74,510**	**230**	**2.45**	**3.09**

Year.	Coal mines.					Total, quarries and mines.				
	Number employed.		Killed.	Number killed per 1,000 employed.		Number employed.		Killed.	Number killed per 1,000 employed.	
	Actual number.	Equivalent in 300-day workers.		Actual time basis.	300-day basis.	Actual number.	Equivalent in 300-day workers.		Actual time basis.	300-day basis.
1911	728,348	534,122	2,656	3.65	4.97	1,005,281	774,628	3,539	3.52	4.57
1912	722,662	541,997	2,419	3.35	4.46	1,004,966	797,496	3,293	3.28	4.13
1913	747,644	593,131	2,785	3.73	4.70	1,045,198	863,865	3,651	3.49	4.23
1914	763,185	526,598	2,454	3.22	4.66	1,009,236	737,404	3,193	3.16	4.33
1915	734,008	511,598	2,269	3.09	4.44	986,866	736,042	2,970	3.01	4.04
1916	720,971	565,766	2,226	3.09	3.93	1,016,453	834,678	3,096	3.05	3.71
1917	757,317	634,666	2,696	3.56	4.25	1,040,186	898,276	3,679	3.54	4.10
1918	762,426	654,973	2,580	3.38	3.94	1,013,364	895,264	3,351	3.31	3.74
1919	776,569	542,217	2,317	2.98	4.27	997,336	740,882	2,908	2.92	3.93
1920	784,602	601,067	2,271	2.89	3.78	1,007,673	812,696	2,874	2.85	3.54
1921	**823,253**	**474,743**	**1,973**	**2.40**	**4.16**	**994,367**	**609,211**	**2,323**	**2.34**	**3.81**

[1]Not available.

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TABLE 32.—***Quarries, metal mines, and coal mines:*** *Principal causes of fatalities, showing percentage due to each cause, by years, 1911 to 1921.*

	Cause of death.								
	Falls of over burden, roof, quarry material, ore, or coal.	Explosives.	Haulage and handling rock, ore, or coal.	Falls of persons.	Electricity.	Machinery.	Gas and dust explosions.	Other causes.	Total.
1911.									
Quarries	**25.53**	**26.60**	**20.21**	**8.51**	**1.07**	**9.04**	.....	**9.04**	**100.00**
Metal mines	32.52	11.22	7.63	15.39	2.45	3.16	.....	27.63	100.00
Coal mines	47.40	6.02	17.13	1.28	3.73	1.51	13.74	9.19	100.00
1912.									
Quarries	**17.37**	**22.06**	**27.70**	**8.92**	**1.87**	**11.74**	.....	**10.33**	**100.00**
Metal mines	34.49	14.22	10.28	13.92	3.78	3.78	.....	19.52	100.00
Coal mines	49.03	6.08	19.14	1.36	3.64	1.65	11.99	7.11	100.00
1913.									
Quarries	**14.75**	**24.04**	**23.50**	**9.29**	**2.73**	**12.57**	.....	**13.12**	**100.00**
Metal mines	34.70	13.03	12.88	12.30	3.81	4.39	.....	18.89	100.00
Coal mines	45.39	4.95	18.31	1.80	3.16	1.80	18.45	6.14	100.00
1914.									
Quarries	**29.45**	**19.44**	**18.33**	**12.78**	**1.67**	**6.11**	.....	**12.22**	**100.00**
Metal mines	36.32	10.73	10.20	16.10	3.04	2.50	.....	21.11	100.00
Coal mines	46.09	5.95	18.79	2.85	4.07	1.87	14.22	6.16	100.00
1915.									
Quarries	**30.40**	**18.92**	**15.55**	**11.48**	**2.03**	**9.46**	.....	**12.16**	**100.00**
Metal mines	36.71	14.10	10.49	15.91	2.53	1.99	.....	18.26	100.00
Coal mines	47.55	6.83	18.64	1.37	4.36	1.68	13.40	6.17	100.00
1916.									
Quarries	**19.08**	**16.18**	**19.66**	**8.09**	**4.05**	**16.76**	.....	**16.18**	**100.00**
Metal mines	32.28	12.77	10.04	14.64	3.73	2.58	.....	23.96	100.00
Coal mines	47.84	6.56	20.89	1.39	4.36	1.89	10.15	6.92	100.00
1917.									
Quarries	**18.32**	**16.03**	**24.43**	**11.45**	**1.52**	**15.27**	.....	**12.98**	**100.00**
Metal mines	26.17	9.27	10.33	13.15	2.23	2.00	.....	36.85	100.00
Coal mines	45.18	4.12	22.11	.96	3.52	2.34	13.43	8.34	100.00
1918.									
Quarries	**14.40**	**13.60**	**24.80**	**12.00**	**3.20**	**14.40**	.....	**17.60**	**100.00**
Metal mines	29.72	13.78	13.00	12.85	3.87	3.25	.....	23.53	100.00
Coal mines	50.13	5.24	24.20	.81	3.99	2.21	5.01	8.41	100.00
1919.									
Quarries	**12.19**	**19.51**	**25.20**	**6.51**	**4.07**	**16.25**	.....	**16.27**	**100.00**
Metal mines	38.46	10.26	10.90	16.02	3.42	4.27	.....	16.67	100.00
Coal mines	47.48	8.89	20.37	.86	3.41	2.07	8.24	8.68	100.00
1920.									
Quarries	**18.54**	**20.23**	**25.84**	**7.30**	**3.93**	**11.80**	.....	**12.36**	**100.00**
Metal mines	33.41	13.41	14.11	10.59	4.24	4.24	.....	20.00	100.00
Coal mines	49.87	5.62	21.37	1.19	4.11	2.70	7.26	7.88	100.00
1921.									
Quarries	**16.67**	**14.17**	**17.50**	**9.17**	**7.50**	**15.83**	.....	**19.16**	**100.00**
Metal mines	31.30	10.00	10.00	17.39	1.74	2.61	.....	26.96	100.00
Coal mines	51.65	7.70	19.36	.91	4.92	1.72	5.83	7.91	100.00

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ACCIDENT RATES FOR THE MINERAL INDUSTRY.

Accidents in all branches of the mineral industry in the United States, including coal mines, metal mines, quarries, coke ovens, and metallurgical plants (except iron-blast furnaces), resulted in the death of 2,367 men in 1921, according to figures compiled by the Bureau of Mines. In 1920, fatal accidents in the industry amounted to 2,984. Nonfatal injuries at coal mines are not reported to the Bureau of Mines; for all other mines, quarries, etc., the number of employees injured was 35,416, as against 56,057 in 1920. (Table 33.)

Accidents at coal mines killed 1,973 men, as compared with 2,271 in 1920; at metal mines 230 men were killed and 18,604 injured, as against 425 killed and 32,562 injured the year before; at stone quarries 120 men were killed and 10,465 injured, as compared with 178 killed and 11,217 injured in 1920.

Though these figures indicate a reduction in fatal and nonfatal accidents as compared with 1920, there was an increase in the number of accidents per thousand men employed. The fatality rate for all workings combined was 3.59 per thousand employees (on a standard basis of 300 working days per year) as against 3.29 the year before, whereas the injury rate for all plants (except coal mines) was 192.69 per thousand employees as compared with 182.51 in 1920.

The increase in accident rates per thousand men employed may be largely attributed to part-time operation during 1921, as periods of idleness or intermittent work are generally followed by an increase in accidents.

The total shifts worked by all employees was 197,560,952, a loss of about 27 per cent from the preceding year. Each employee averaged only 189 working days as comapred with 249 in 1920. Coal-mine employees averaged only 173 days, a loss of 57 days per man, as compared with 1920; employees at iron mines worked 210 days, a loss of 85 days each; copper-mine employees averaged 244 days, a loss of 73 days each; employees at stone quarries averaged 233 days, a loss of 34 days per man.

A summary of accident rates in the mineral industry for each year covered by the reports of the Bureau of Mines is given in Tables 34 and 35.

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TABLE 33.—*Fatality rates in different branches of mineral industries in 1921, compared on a 300-day basis (length of shift not considered).*

Branch of mineral industry.	Average days active.	Men employed.		Days of labor performed.	Killed.	Injured.	Number killed or injured per 1,000 300-day workers.	
		Actual number.	Equivalent in 300-day workers (calculated).				Killed.	Injured.
Coal mines	173	823,253	474,743	142,422,769	1,973	(a)	4.16	.....
All metal mines	238	93,929	74,510	22,352,702	230	18,604	3.09	249.68
Copper mines	244	18,300	14,871	4,461,296	55	4,722	3.70	317.53
Gold and miscellaneous metal mines	269	26,516	23,738	7,121,402	78	5,352	3.29	225.46
Iron mines	210	30,559	21,369	6,410,573	65	4,507	3.04	210.91
Lead and zinc mines (Mississippi Valley)	234	6,948	5,431	1,629,191	14	2,062	2.58	379.67
Nonmetallic mineral mines	235	11,606	9,101	2,730,240	18	1,961	1.98	215.47
All quarries (including outside works)	233	77,185	59,958	17,987,547	120	10,465	2.00	174.54
Cement-rock quarries	290	10,815	10,459	3,137,789	20	2,233	1.91	213.50
Granite quarries	222	9,479	7,010	2,102,854	18	940	2.57	134.09
Limestone quarries	223	39,551	29,394	8,819,813	58	5,248	1.97	178.51
Marble quarries	265	4,549	4,025	1,207,467	6	406	1.49	100.87
Sandstone and bluestone quarries	183	3,928	2,394	718,310	3	374	1.25	156.22
Slate quarries	240	3,564	2,848	854,396	4	385	1.40	135.18
Trap-rock quarries	216	5,299	3,823	1,146,918	11	879	2.88	229.92
All quarries (excluding outside works)	220	49,292	36,082	10,824,541	80	6,029	2.22	167.09
All quarries (outisde works only)	257	27,893	23,877	7,163,006	40	4,436	1.68	185.79
Metallurgical plants	284	37,465	35,458	10,637,636	27	4,494	.76	126.74
Ore-dressing plants	240	10,047	8,037	2,411,148	4	1,214	.50	151.05
Smelters	307	18,656	19,113	5,733,969	14	2,129	.73	111.39
Auxiliary works	284	8,762	8,308	2,492,519	9	1,151	1.08	138.54
All coke ovens	257	16,204	13,808	4,160,298	17	1,853	1.23	133.62
Beehive coke ovens	141	6,011	2,835	850,543	5	336	1.76	118.52
By-product coke ovens	325	10,193	11,033	3,309,755	12	1,517	1.09	137.50
Total, 1921	**189**	**1,048,036**	**658,537**	**197,560,952**	**2,367**	**a35,416**	**3.59**	**192.69**
Total, 1920	249	1,095,044	908,204	272,460,757	2,984	a56,057	3.29	182.51

a Injuries for coal mines not available.

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TABLE 34.—*United States: Number of men killed per 1,000 300-day workers employed in mineral industries.*

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Coal mines	4.97	4.46	4.70	4.66	4.44	3.93	4.25	3.94	4.27	3.78	4.16
All metal mines	4.45	4.09	3.72	3.92	3.89	3.62	4.44	3.57	3.47	3.16	3.09
Copper mines	5.18	4.53	4.08	3.85	3.72	3.64	5.88	3.45	3.54	3.43	3.70
Gold and miscellaneous metal mines	4.28	4.32	3.83	4.06	4.79	4.05	4.03	4.27	4.41	4.20	3.29
Iron mines	4.64	3.96	3.29	3.78	2.88	3.41	3.54	3.45	3.09	2.34	3.04
Lead and zinc mines (Mississippi Valley)	4.03	4.28	3.90	4.32	5.37	3.14	4.09	3.58	4.13	3.27	2.58
Nonmetallic mineral mines	2.01	1.66	3.02	3.72	2.43	3.00	2.48	1.67	1.65	2.89	1.98
All quarries (including outside work)	2.23	2.27	2.10	2.64	1.89	2.26	1.83	2.11	1.93	2.31	2.00
Cement-rock quarries	3.96	3.48	2.99	3.95	1.60	2.38	2.99	2.14	2.66	2.75	1.91
Granite quarries	1.92	1.87	1.47	3.36	2.27	1.86	1.54	2.10	1.81	2.06	2.57
Limestone quarries	2.21	2.19	2.13	2.38	1.70	2.36	1.79	1.79	1.97	2.58	1.97
Marble quarries	.71	2.48	1.81	2.72	1.00	1.16	.57	2.14	.51	.92	1.49
Sandstone and bluestone quarries	1.82	1.16	1.32	1.45	.93	1.28	.99	2.38	.76	.56	1.25
Slate quarries	2.60	2.62	3.05	2.99	2.02	2.62	1.31	3.16	1.78	1.49	1.40
Trap-rock quarries	1.77	3.08	2.40	2.49	3.46	4.45	2.61	4.47	2.56	2.61	2.88
All quarries (excluding outside works)	.....	.....	.....	.....	2.17	2.32	2.00	2.19	2.29	2.81	2.22
All quarries (outside works only)	.....	.....	.....	.....	1.05	2.15	1.53	1.98	1.34	1.59	1.68
Metallurgical plants:											
Ore-dressing plants	.....	.....	.99	1.51	1.57	1.41	1.93	1.55	1.48	1.31	.50
Smelters	.....	.....	1.93	1.02	1.05	.73	1.05	.92	1.09	.69	.73
Auxiliary works	.....	.....	.....	.....	.....	.89	.94	.85	.31	1.11	1.08
All coke ovens	.....	.....	1.97	2.12	1.21	1.32	2.14	2.06	1.92	1.64	1.25
Beehive coke ovens	.....	.....	.....	.....	.65	1.29	1.30	1.16	.92	1.09	1.76
By-products coke ovens	.....	.....	.....	.....	1.75	1.35	3.13	2.84	2.55	1.92	1.09

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TABLE 35.—*United States: Number of men injured per 1,000 300-day workers employed in mineral industries.*

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Coal mines [a]											
All metal mines	170.27	190.11	179.59	211.87	248.56	250.64	240.97	237.09	233.60	242.02	249.68
Copper mines	225.25	258.42	230.80	312.19	322.01	319.58	313.35	322.12	309.60	323.20	317.53
Gold and miscellaneous metal mines	80.33	93.04	70.37	126.90	201.49	190.79	172.51	185.18	191.29	204.82	225.46
Iron mines	252.30	241.81	258.31	224.07	233.51	240.17	227.54	185.45	202.35	200.49	210.91
Lead and zinc mines (Mississippi Valley)	139.40	158.29	133.51	189.01	238.27	263.09	272.99	319.54	292.28	327.97	379.67
Nonmetallic mineral mines	34.03	66.40	84.86	99.75	107.78	144.70	123.58	104.69	139.27	161.88	215.47
All quarries (including outside works)	63.85	69.82	88.81	114.92	117.30	175.62	185.14	147.07	144.20	145.51	174.54
Cement-rock quarries	136.52	139.59	207.99	226.20	148.25	248.83	277.73	238.65	231.58	182.49	213.50
Granite quarries	53.07	44.87	69.60	109.21	96.72	143.99	189.73	109.68	124.70	130.53	134.09
Limestone quarries	67.99	79.98	89.05	114.23	127.43	176.10	175.52	141.34	134.05	143.11	178.51
Marble quarries	43.39	42.35	68.67	121.31	93.80	125.20	100.20	58.02	75.26	91.98	100.87
Sandstone and bluestone quarries	34.68	45.26	74.36	69.08	66.56	127.86	118.89	148.04	131.96	100.56	156.22
Slate quarries	17.72	15.01	18.81	28.61	33.08	85.00	112.04	96.29	98.51	108.20	135.18
Trap-rock quarries	69.76	68.89	87.77	152.56	232.85	237.84	222.92	205.17	186.47	208.89	229.92
All quarries (excluding outside works)					127.57	158.63	162.95	148.29	146.65	139.62	167.09
All quarries (outside works only)					96.90	206.06	223.81	145.03	140.28	154.04	185.79
Metallurgical plants:											
Ore-dressing plants			122.38	94.19	109.65	135.66	121.12	139.54	122.21	164.24	151.05
Smelters			174.71	175.44	157.69	195.61	152.88	148.40	141.46	142.33	111.39
Auxiliary works						142.10	169.33	139.63	101.29	116.19	138.54
All coke ovens			107.73	103.06	90.78	153.49	188.59	219.64	145.66	114.13	133.62
Beehive coke ovens					39.84	100.37	94.43	131.11	125.96	102.54	118.52
By-product coke ovens					140.00	217.09	300.06	296.06	158.33	120.04	137.50

[a] Injury rates not available.

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SUMMARY OF QUARRY STATISTICS.

Table 36 shows the number of companies operating their quarries during the past six years. Tables 37 to 43, inclusive, present a summary of the annual labor and accident data covering the quarry industry in the United States for the pre-war year 1913, the year 1914, during the latter half of which the war in Europe was in progress, and the years 1919 to 1921, inclusive.

TABLE 36.—*Number of active operators, by States, 1916 to 1921.*

State.	Number of active operators.					
	1916	1917	1918	1919	1920	1921
Alabama	24	25	26	24	24	25
Arizona	10	8	6	5	7	5
Arkansas	14	12	12	13	14	10
California	91	83	108	70	84	89
Colorado	39	22	20	24	27	27
Connecticut	33	25	22	24	26	23
Florida	11	9	4	5	6	4
Georgia	37	27	18	22	22	28
Idaho	9	10	5	8	10	5
Illinois	71	64	49	52	57	53
Indiana	77	72	49	59	62	68
Iowa	37	34	27	28	23	25
Kansas	42	38	35	33	32	32
Kentucky	61	54	38	38	42	34
Maine	44	37	27	25	30	29
Maryland	41	46	37	40	37	32
Massachusetts	102	90	67	77	72	78
Michigan	30	26	26	22	23	21
Minnesota	56	49	41	38	46	45
Missouri	94	82	75	71	69	69
Montana	10	11	11	8	10	8
Nebraska	8	7	6	6	7	5
New Hampshire	23	24	18	21	26	26
New Jersey	69	65	55	52	50	47
New Mexico	7	8	6	5	10	9
New York	165	149	107	125	111	131
North Carolina	20	24	17	17	15	16
Ohio	136	121	99	101	98	105
Oklahoma	17	15	18	13	22	14
Oregon	12	12	10	9	9	8
Pennsylvania	517	440	250	376	327	369
Rhode Island	13	12	12	10	10	11
South Dakota	16	12	9	9	13	9
Tennessee	48	45	41	36	37	31
Texas	28	25	23	26	32	36
Utah	19	17	13	13	15	18
Vermont	69	67	59	56	59	66
Virginia	64	58	49	47	46	47
Washington	23	20	19	16	16	15
West Virginia	35	27	27	25	21	22
Wisconsin	91	88	68	66	61	59
Wyoming	4	4	3	3	3	4
Not segregated	18	10	8	6	6	6
Total	**2,335**	**2,074**	**1,620**	**1,724**	**1,717**	**1,764**

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TABLE 37.—*All quarries: Average number of men employed, by States, during the years ended December 31, 1913, 1914, and 1919–1921.*

State.	In and about quarry.					In outside works.					Total.				
	1913	1914	1919	1920	1921	1913	1914	1919	1920	1921	1913	1914	1919	1920	1921
Alabama	1,233	1,009	1,135	1,396	1,383	554	353	673	646	550	1,787	1,362	1,808	2,042	1,933
Arizona	92	101	193	173	132	41	29	27	47	14	133	130	220	220	146
Arkansas	224	220	254	315	273	33	156	61	76	120	257	376	315	391	393
California	2,741	3,004	1,184	1,918	1,800	755	859	1,103	1,691	1,919	3,496	3,863	2,287	3,609	3,719
Colorado	780	644	454	497	485	148	106	285	355	162	928	750	739	852	647
Connecticut	1,802	833	425	467	462	425	417	121	207	110	2,227	1,250	546	674	572
Florida	(a)	156	98	173	112	(a)	135	75	68	54	(a)	291	173	241	166
Georgia	1,621	1,221	673	834	1,165	394	411	820	893	723	2,015	1,632	1,493	1,727	1,888
Idaho	184	157	120	149	120	44	75	79	17	14	228	232	199	166	134
Illinois	3,277	2,717	1,951	2,155	2,112	2,370	663	1,503	1,739	1,129	5,647	3,380	3,454	3,894	3,241
Indiana	3,791	2,691	2,331	2,822	2,718	1,453	974	1,221	1,440	1,716	5,244	3,665	3,552	4,262	4,434
Iowa	1,025	766	558	537	503	144	208	132	495	200	1,169	974	690	1,032	703
Kansas	1,283	866	678	997	561	817	291	435	1,217	802	2,100	1,157	1,113	2,214	1,363
Kentucky	1,822	1,768	982	1,013	1,064	496	319	198	196	239	2,318	2,087	1,180	1,209	1,303
Maine	1,248	1,120	629	829	1,039	1,009	493	613	861	729	2,257	1,613	1,242	1,690	1,768
Maryland	1,644	1,355	1,391	1,334	775	775	389	756	839	627	2,419	1,744	2,147	2,173	1,402
Massachusetts	2,591	2,176	1,758	1,578	1,800	1,654	993	892	1,036	1,172	4,245	3,169	2,650	2,614	2,972
Michigan	1,069	1,055	1,170	1,232	1,056	742	676	601	832	942	1,811	1,731	1,771	2,064	1,998
Minnesota	1,442	1,329	817	886	790	719	247	375	606	373	2,161	1,576	1,192	1,492	1,163
Missouri	2,845	3,517	1,802	2,075	2,361	1,197	975	742	1,074	718	4,042	4,492	2,544	3,149	3,079
Montana	151	222	88	78	58	14	45	138	33	141	165	267	226	111	199
Nebraska	420	378	197	191	77	113	75	29	44	14	533	453	226	235	91
New Hampshire	447	691	577	822	508	418	275	236	314	229	865	966	813	1,136	737
New Jersey	2,375	2,168	1,320	1,279	1,230	805	580	522	739	612	3,180	2,748	1,842	2,018	1,842
New Mexico	55	163	101	449	310	127	13	52	92	77	182	176	153	541	387
New York	4,467	4,155	2,897	2,496	2,736	723	747	1,550	1,607	1,621	5,190	4,902	4,447	4,103	4,357
North Carolina	856	723	811	750	809	136	212	455	354	237	992	935	1,266	1,104	1,046
Ohio	5,903	5,077	3,096	4,077	2,950	2,027	1,251	1,897	1,652	1,620	7,930	6,328	4,993	5,729	4,570
Oklahoma	422	316	457	933	492	26	72	472	660	479	448	388	929	1,593	971
Oregon	160	182	155	145	107	68	64	54	26	12	228	246	209	171	119
Pennsylvania	14,986	14,463	10,632	10,750	9,867	7,023	4,263	5,877	7,024	5,127	22,009	18,726	16,509	17,774	14,994
Rhode Island	303	358	222	292	197	704	214	303	259	121	1,007	572	525	551	318
South Dakota	246	134	121	163	142	100	38	16	44	20	346	172	137	207	162

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Tennessee	1,793	1,609	1,153	1,100	1,254	580	565	390	266	605	2,373	2,174	1,543	1,366	1,859
Texas	908	882	612	916	899	303	202	650	1,002	1,010	1,211	1,084	1,262	1,918	1,909
Utah	328	373	196	188	260	52	56	28	155	153	380	429	224	343	413
Vermont	3,424	3,118	2,138	2,961	2,247	612	557	2,070	2,052	1,883	4,036	3,675	4,208	5,013	4,130
Virginia	1,785	1,608	1,264	1,232	1,275	975	825	844	810	515	2,760	2,433	2,108	2,042	1,790
Washington	930	997	209	277	270	148	433	135	213	92	1,078	1,430	344	490	362
West Virginia	1,926	860	1,075	1,483	973	603	179	463	592	385	2,619	1,039	1,538	2,075	1,358
Wisconsin	1,730	1,986	1,552	1,345	1,551	1,186	626	728	515	508	2,916	2,612	2,280	1,860	2,059
Wyoming	125	74	54	99	112	.....	.....	22	24	34	125	74	76	123	146
Not segregated	933	542	272	236	257	288	91	60	34	85	1,221	633	332	270	342
Total	**75,387**	**67,784**	**47,802**	**53,642**	**49,292**	**30,891**	**20,152**	**27,703**	**32,846**	**27,893**	**106,278**	**87,936**	**75,505**	**86,488**	**77,185**

[a] Not segregated.

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TABLE 38.—***All quarries:*** *Number of 300-day workers employed, by States, during the years ended December 31, 1913, 1914, and 1919–1921.*

State.	In and about quarry.					In outside works.					Total.				
	1913[a]	1914[a]	1919	1920	1921	1913[a]	1914[a]	1919	1920	1921	1913	1914	1919	1920	1921
Alabama	.....	.....	1,018	1,106	976	.....	.....	723	606	485	1,590	1,120	1,741	1,712	1,461
Arizona	.....	.....	134	145	124	.....	.....	17	25	13	99	69	151	170	137
Arkansas	.....	.....	164	231	204	.....	.....	59	73	82	165	235	223	304	286
California	.....	.....	1,014	1,934	1,483	.....	.....	990	2,031	2,103	3,068	3,179	2,004	3,965	3,586
Colorado	.....	.....	343	452	291	.....	.....	270	411	110	843	671	613	863	401
Connecticut	.....	.....	347	357	345	.....	.....	102	180	93	1,874	934	449	537	438
Florida	.....	.....	95	135	126	.....	.....	70	75	49	(b)	271	165	210	175
Georgia	.....	.....	588	728	993	.....	.....	812	894	717	1,760	1,393	1,400	1,622	1,710
Idaho	.....	.....	83	135	106	.....	.....	61	15	16	172	114	144	150	122
Illinois	.....	.....	1,594	1,706	1,535	.....	.....	1,410	1,705	961	3,906	2,601	3,004	3,411	2,496
Indiana	.....	.....	1,803	2,376	2,241	.....	.....	1,017	1,357	1,541	4,300	2,953	2,820	3,733	3,782
Iowa	.....	.....	409	449	368	.....	.....	89	546	136	1,191	674	498	995	504
Kansas	.....	.....	500	881	375	.....	.....	385	1,218	774	1,308	770	885	2,099	1,149
Kentucky	.....	.....	709	638	688	.....	.....	144	141	162	1,480	1,357	853	779	850
Maine	.....	.....	567	642	812	.....	.....	588	842	691	1,966	1,339	1,155	1,484	1,503
Maryland	.....	.....	1,199	1,178	614	.....	.....	495	843	593	1,908	1,307	1,694	2,021	1,207
Massachusetts	.....	.....	1,389	1,252	1,387	.....	.....	717	895	957	3,480	2,349	2,106	2,147	2,344
Michigan	.....	.....	923	1,044	687	.....	.....	452	737	672	1,486	1,311	1,375	1,781	1,359
Minnesota	.....	.....	676	719	518	.....	.....	247	450	235	1,746	1,057	923	1,169	753
Missouri	.....	.....	1,574	2,001	1,943	.....	.....	644	1,113	647	3,119	3,557	2,218	3,114	2,590
Montana	.....	.....	52	80	33	.....	.....	63	28	75	156	198	115	108	108
Nebraska	.....	.....	162	183	52	.....	.....	23	29	8	384	302	185	212	60
New Hampshire	.....	.....	476	667	310	.....	.....	207	266	189	726	786	683	933	499
New Jersey	.....	.....	939	1,033	951	.....	.....	432	595	548	2,614	1,954	1,371	1,628	1,499
New Mexico	.....	.....	51	311	113	.....	.....	18	70	14	140	111	69	381	127
New York	.....	.....	2,049	1,965	1,817	.....	.....	1,186	1,421	1,177	4,122	3,675	3,235	3,386	2,994
North Carolina	.....	.....	695	655	557	.....	.....	380	315	159	786	675	1,075	970	716
Ohio	.....	.....	2,526	3,449	2,163	.....	.....	1,669	1,380	1,358	6,488	5,044	4,195	4,829	3,521
Oklahoma	.....	.....	305	753	360	.....	.....	362	668	494	403	294	667	1,421	854
Oregon	.....	.....	103	81	64	.....	.....	36	12	4	89	125	139	93	68
Pennsylvania	.....	.....	8,980	9,402	6,651	.....	.....	5,373	6,780	4,229	18,795	14,942	14,353	16,182	10,880
Rhode Island	.....	.....	199	267	160	.....	.....	303	254	113	826	487	502	521	273
South Dakota	.....	.....	98	125	101	.....	.....	13	33	12	208	115	111	158	113

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Tennessee	977	970	1,011	358	259	491	2,113	1,680	1,335	1,229	1,502
Texas	564	825	671	672	984	945	957	810	1,236	1,809	1,616
Utah	177	184	179	24	171	154	314	321	201	355	333
Vermont	2,033	2,518	1,736	2,118	2,067	1,603	3,837	3,391	4,151	4,585	3,339
Virginia	1,082	1,021	947	790	771	399	2,217	1,905	1,872	1,792	1,346
Washington	184	272	238	138	179	77	980	1,000	322	451	315
West Virginia	974	1,383	620	352	570	289	2,276	727	1,326	1,953	909
Wisconsin	1,256	1,091	1,235	638	417	396	2,105	1,860	1,894	1,508	1,631
Wyoming	49	66	70	19	17	20	98	60	68	83	90
Not segregated	218	207	227	50	29	85	1,046	464	268	236	312
Total	**39,278**	**45,617**	**36,082**	**24,516**	**31,472**	**23,876**	**87,141**	**68,187**	**63,794**	**77,089**	**59,958**

[a] Not segregated prior to 1915.

[b] Not shown separately.

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TABLE 39.—***All quarries:*** *Days of labor performed during the years ended December 31, 1913, 1914, and 1919–1921.*

State.	In and about quarry.					In outside works.					Total.				
	1913 [a]	1914 [a]	1919	1920	1921	1913 [a]	1914 [a]	1919	1920	1921	1913	1914	1919	1920	1921
Alabama	.....	.....	305,372	331,849	292,872	.....	.....	216,738	181,853	145,474	476,934	336,187	522,110	513,702	438,346
Arizona	.....	.....	40,144	43,578	37,266	.....	.....	5,150	7,546	3,808	29,796	20,762	45,294	51,124	41,074
Arkansas	.....	.....	49,270	69,223	61,192	.....	.....	17,658	22,046	24,600	49,380	70,358	66,928	91,269	85,792
California	.....	.....	304,384	580,176	444,791	.....	.....	296,949	609,337	630,901	920,500	953,650	601,333	1,189,513	1,075,692
Colorado	.....	.....	102,909	135,685	87,183	.....	.....	80,916	123,074	32,993	252,948	201,280	183,825	258,759	120,176
Connecticut	.....	.....	104,193	107,002	103,628	.....	.....	30,645	54,044	27,811	562,344	280,093	134,838	161,046	131,439
Florida	.....	.....	28,668	40,543	37,838	.....	.....	20,930	22,575	14,812	(b)	81,320	49,598	63,118	52,650
Georgia	.....	.....	176,467	218,433	297,816	.....	.....	243,419	268,280	215,320	528,001	418,015	419,886	486,713	513,136
Idaho	.....	.....	24,791	40,506	31,715	.....	.....	18,379	4,630	4,800	51,736	34,237	43,170	45,136	36,515
Illinois	.....	.....	478,154	511,741	460,558	.....	.....	423,085	511,450	288,121	1,171,720	780,165	901,239	1,023,191	748,679
Indiana	.....	.....	540,980	712,710	672,382	.....	.....	305,050	407,050	462,367	1,289,934	885,824	846,030	1,119,760	1,134,749
Iowa	.....	.....	122,829	134,685	110,525	.....	.....	26,563	163,802	40,700	357,308	202,141	149,392	298,487	151,225
Kansas	.....	.....	150,064	264,355	112,556	.....	.....	115,439	365,247	232,162	392,310	230,888	265,503	629,602	344,718
Kentucky	.....	.....	212,784	191,304	206,265	.....	.....	43,016	42,410	48,833	443,859	407,205	255,800	233,714	255,098
Maine	.....	.....	170,086	192,501	243,801	.....	.....	176,356	252,605	207,226	589,666	401,830	346,442	445,106	451,027
Maryland	.....	.....	359,820	353,423	184,208	.....	.....	148,396	252,916	177,919	572,477	392,088	508,216	606,339	362,127
Massachusetts	.....	.....	416,630	375,732	416,183	.....	.....	215,286	268,321	286,969	1,043,995	704,890	631,916	644,053	703,152
Michigan	.....	.....	276,806	313,075	205,930	.....	.....	135,804	221,191	201,736	445,651	393,273	412,610	534,266	407,666
Minnesota	.....	.....	202,783	215,667	155,366	.....	.....	74,126	134,921	70,495	523,922	317,063	276,909	350,588	225,861
Missouri	.....	.....	472,274	600,298	582,989	.....	.....	193,194	333,886	193,908	935,792	1,067,133	665,468	934,184	776,897
Montana	.....	.....	15,766	24,073	9,909	.....	.....	18,860	8,248	22,560	46,883	59,444	31,626	32,321	32,469
Nebraska	.....	.....	48,470	54,805	15,736	.....	.....	7,024	8,965	2,355	115,126	90,457	55,494	63,770	18,091
New Hampshire	.....	.....	142,816	199,987	92,930	.....	.....	62,120	79,884	56,883	217,873	235,848	204,936	279,871	149,813
New Jersey	.....	.....	281,740	309,904	285,347	.....	.....	120,555	178,384	164,321	784,152	586,230	411,295	488,288	449,668
New Mexico	.....	.....	15,290	93,366	33,788	.....	.....	5,285	21,004	4,200	42,000	33,231	20,575	114,370	37,988
New York	.....	.....	614,661	589,369	545,023	.....	.....	355,903	426,514	353,194	1,236,571	1,102,610	970,564	1,015,883	898,217
North Carolina	.....	.....	208,593	196,399	166,925	.....	.....	113,901	94,580	47,760	235,686	202,630	322,494	290,979	214,685
Ohio	.....	.....	757,785	1,034,751	648,842	.....	.....	500,737	413,903	407,477	1,946,262	1,513,392	1,258,522	1,448,654	1,056,319
Oklahoma	.....	.....	91,580	225,868	108,002	.....	.....	108,587	200,454	148,060	120,998	88,256	200,167	426,322	256,062
Oregon	.....	.....	30,760	24,240	19,178	.....	.....	10,947	3,644	1,161	26,724	37,439	41,707	27,884	20,339
Pennsylvania	.....	.....	2,693,854	2,820,702	1,995,290	.....	.....	1,612,058	2,033,970	1,268,826	5,638,616	4,482,573	4,305,912	4,854,672	3,264,116
Rhode Island	.....	.....	59,784	80,124	48,077	.....	.....	90,759	76,125	33,705	247,798	146,249	150,543	156,249	81,782
South Dakota	.....	.....	29,178	37,630	30,242	.....	.....	3,975	9,801	3,664	62,266	34,534	33,153	47,431	33,906

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Tennessee	292,921	291,094	303,287	.....	.....	107,481	77,573	147,442	633,848	503,869	400,402	368,667	450,720
Texas	169,172	247,485	201,231	.....	.....	201,634	206,224	283,542	287,020	242,932	370,806	542,709	484,773
Utah	53,208	55,307	53,779	.....	.....	7,106	51,122	46,100	94,250	90,343	60,314	106,429	90,879
Vermont	609,676	755,255	520,865	.....	.....	635,502	620,237	480,789	1,151,218	1,017,244	1,245,178	1,375,492	1,001,654
Virginia	324,663	306,339	284,197	.....	.....	236,968	231,219	119,749	665,052	571,355	501,631	537,558	403,946
Washington	55,320	81,756	71,251	.....	.....	41,414	53,088	23,214	203,894	299,888	96,734	135,444	94,465
West Virginia	292,153	414,791	186,023	.....	.....	105,523	171,045	86,819	682,927	218,216	397,676	585,836	272,842
Wisconsin	376,763	327,343	370,599	.....	.....	191,495	125,034	118,734	631,605	558,130	568,258	452,377	489,333
Wyoming	14,600	19,927	20,914	.....	.....	5,808	5,130	5,980	29,520	17,928	20,408	25,057	26,894
Not segregated	65,306	62,148	68,042	.....	.....	15,100	8,567	25,516	313,675	138,957	80,406	70,715	93,558
Total	**11,783,467**	**13,685,149**	**10,824,541**	.....	.....	**7,354,841**	**9,441,499**	**7,163,006**	**26,142,237**	**20,456,157**	**19,138,308**	**23,126,648**	**17,987,547**

a Not segregated prior to 1915.

b Not shown separately.

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TABLE 40.—***All quarries:*** *Average number of days quarries were operated, by States, during the years ended December 31, 1913, 1914, and 1919–1921.*

State.	In and about quarry.					In outside works.					Total.				
	1913 [a]	1914 [a]	1919	1920	1921	1913 [a]	1914 [a]	1919	1920	1921	1913	1914	1919	1920	1921
Alabama	.....	.....	269	238	212	.....	.....	322	282	264	267	247	289	252	227
Arizona	.....	.....	208	252	282	.....	.....	191	161	272	224	160	206	232	281
Arkansas	.....	.....	194	220	224	.....	.....	289	290	205	192	187	212	233	218
California	.....	.....	257	302	247	.....	.....	269	360	329	263	247	263	330	289
Colorado	.....	.....	227	273	180	.....	.....	284	347	204	273	268	249	304	186
Connecticut	.....	.....	245	229	224	.....	.....	253	261	253	253	224	247	239	230
Florida	.....	.....	293	234	338	.....	.....	279	332	274	.....	279	287	262	317
Georgia	.....	.....	262	262	256	.....	.....	297	300	298	262	256	281	282	272
Idaho	.....	.....	207	272	264	.....	.....	233	272	343	227	148	217	272	273
Illinois	.....	.....	245	237	218	.....	.....	281	294	255	207	231	261	263	231
Indiana	.....	.....	232	253	247	.....	.....	250	283	269	246	242	238	263	256
Iowa	.....	.....	220	251	220	.....	.....	201	331	204	306	208	217	289	215
Kansas	.....	.....	221	265	201	.....	.....	265	300	289	187	200	239	284	253
Kentucky	.....	.....	217	189	194	.....	.....	217	216	204	191	195	217	193	196
Maine	.....	.....	270	232	235	.....	.....	288	293	284	261	249	279	263	255
Maryland	.....	.....	259	265	238	.....	.....	196	301	284	237	225	237	279	258
Massachusetts	.....	.....	237	238	231	.....	.....	241	259	245	246	222	238	246	237
Michigan	.....	.....	237	254	195	.....	.....	226	266	214	246	227	233	259	204
Minnesota	.....	.....	248	243	197	.....	.....	198	223	189	242	201	232	235	194
Missouri	.....	.....	262	289	247	.....	.....	260	311	270	232	238	262	297	252
Montana	.....	.....	179	309	171	.....	.....	137	250	160	284	223	153	291	163
Nebraska	.....	.....	246	287	204	.....	.....	242	204	168	216	200	246	271	199
New Hampshire	.....	.....	248	243	183	.....	.....	263	254	248	252	244	252	246	203
New Jersey	.....	.....	213	242	232	.....	.....	248	241	268	247	213	223	242	244
New Mexico	.....	.....	151	208	109	.....	.....	102	228	55	231	189	134	211	98
New York	.....	.....	212	236	199	.....	.....	230	265	218	238	225	218	248	206
North Carolina	.....	.....	257	262	206	.....	.....	250	267	202	238	217	255	264	205
Ohio	.....	.....	245	254	220	.....	.....	264	251	252	245	239	252	253	231
Oklahoma	.....	.....	200	242	220	.....	.....	230	304	309	270	227	215	268	264
Oregon	.....	.....	198	167	179	.....	.....	203	140	97	117	152	200	163	171
Pennsylvania	.....	.....	253	262	202	.....	.....	274	290	247	256	239	261	273	218
Rhode Island	.....	.....	269	274	244	.....	.....	300	294	279	246	256	287	284	257
South Dakota	.....	.....	241	231	213	.....	.....	248	223	183	180	201	242	229	209

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Tennessee			254	265	242			276	292	244	267	232	259	270	242
Texas			276	270	224			310	295	281	237	224	294	283	245
Utah			271	294	207			254	330	301	248	225	269	310	242
Vermont			285	255	232			307	302	255	285	277	296	274	243
Virginia			257	249	223			281	285	233	241	235	266	263	226
Washington			265	295	264			307	252	252	273	210	281	276	261
West Virginia			272	280	191			228	289	226	261	210	259	282	201
Wisconsin			243	243	239			263	243	234	217	214	249	243	238
Wyoming			270	201	187			264	214	176	236	242	269	204	184
Not segregated			240	263	265			252	252	300	257	220	242	262	274
Total			**247**	**255**	**220**			**265**	**287**	**257**	**246**	**233**	**253**	**267**	**233**

[a] Not segregated prior to 1915.

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TABLE 41.—***All quarries:*** *Number of fatalities, by States, during the years ended December 31, 1913, 1914, and 1919–1921.*

State.	In and about quarry.					In outside works.					Total.				
	1913	1914	1919	1920	1921	1913	1914	1919	1920	1921	1913	1914	1919	1920	1921
Alabama	2	2	1							1	2	2	1		1
Arizona	1										1				
Arkansas			1	1	2								1	1	2
California	18	6	5	14	10	1	2	1	6	2	19	8	6	20	12
Colorado				2		1		1		2	1		1	2	2
Connecticut	3	3		1	1				1		3	3		2	1
Florida			1										1		
Georgia	1	1	1		1				1	1	1	1	1	1	2
Idaho					1										1
Illinois	7	9	8	6	2	2	1	3		3	9	10	11	6	5
Indiana	3	3		4	6	2	2	1	4	2	5	5	1	8	8
Iowa	1	1	1	1	1				1		1	1	1	2	1
Kansas	1	1		3		1	3	1			2	4	1	3	
Kentucky	1	4	2	6	3	3				1	4	4	2	6	4
Maine	3	3						2	1		3	3	2	1	
Maryland	1	5	6	3	3	1	2	2	2		2	7	8	5	3
Massachusetts	2	3	6	1	3	3	1	3	1	1	5	4	9	2	4
Michigan		4	5	3	2	5	3		2	5	5	7	5	5	7
Minnesota	2	4	1	3			1				2	5	1	3	
Missouri	5	4	1	3			3		1		5	7	1	4	
Montana	1										1				
Nebraska							1		1			1		1	
New Hampshire				1	1	1					1			1	1
New Jersey	1	8	3	4	1				1	1	1	8	3	5	2
New Mexico	2	2									2	2			
New York	7	12	1	2	3			3	4	3	7	12	4	6	6
North Carolina		2	1		2	1				3	1	2	1		5
Ohio	9	5	8	7	3	3	1	1	1	7	12	6	9	8	10
Oklahoma	1			3	1			1	5		1		1	8	1
Oregon															
Pennsylvania	30	24	17	39	12	12	7	7	10	4	42	31	24	49	16
Rhode Island	2	2									2	2			
South Dakota					3										3

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TABLE 42.—*All quarries: Number of injuries, by States, during the years ended December 31, 1913, 1914, and 1919–1921.*

State.	In and about quarry.					In outside works.					Total.				
	1913	1914	1919	1920	1921	1913	1914	1919	1920	1921	1913	1914	1919	1920	1921
Alabama	110	70	118	169	185	10	8	42	173	187	120	78	160	342	372
Arizona	2	1	4	24	1	3	3	2	.....	.....	5	4	6	24	1
Arkansas	4	17	16	8	8	1	3	5	1	2	5	20	21	9	10
California	195	418	186	370	350	60	93	186	455	322	255	511	372	825	672
Colorado	239	32	33	62	44	17	8	20	9	19	256	40	53	71	63
Connecticut	84	107	66	47	76	9	15	33	50	20	93	122	99	97	96
Florida	.....	.....	.....	4	1	.....	3	.....	3	1	.....	3	.....	7	2
Georgia	42	44	15	17	34	8	11	48	32	52	50	55	63	49	86
Idaho	20	13	11	25	18	1	1	11	.....	2	21	14	22	25	20
Illinois	473	384	332	334	342	106	129	197	266	168	579	513	529	600	510
Indiana	297	280	205	310	345	137	171	247	211	249	434	451	452	521	594
Iowa	100	63	56	70	80	7	26	4	6	14	107	89	60	76	94
Kansas	87	107	115	67	56	13	21	208	231	203	100	128	323	298	259
Kentucky	102	87	73	105	136	13	8	12	14	11	115	95	85	119	147
Maine	18	34	41	76	72	8	4	43	97	74	26	38	84	173	146
Maryland	85	94	195	185	100	14	22	164	233	102	99	116	359	418	202
Massachusetts	305	411	248	232	225	110	57	92	147	189	415	468	340	379	414
Michigan	146	143	175	164	118	116	140	129	304	377	262	283	304	468	495
Minnesota	129	120	154	96	102	35	16	32	81	80	164	136	186	177	182
Missouri	398	237	291	301	277	35	26	139	183	138	433	263	430	484	415
Montana	10	14	10	7	8	4	2	4	3	13	14	16	14	10	21
Nebraska	5	6	16	24	4	.....	3	3	1	.....	5	9	19	25	4
New Hampshire	42	35	41	47	36	3	7	23	35	61	45	42	64	82	97
New Jersey	282	223	163	145	175	22	34	63	76	181	304	257	226	221	356
New Mexico	2	97	3	31	21	.....	4	1	8	.....	2	101	4	39	21
New York	346	469	300	301	386	35	27	219	191	435	381	496	519	492	821
North Carolina	37	99	43	19	38	7	9	11	16	3	44	108	54	35	41
Ohio	401	484	442	446	451	138	202	238	280	265	539	686	680	726	716
Oklahoma	51	37	30	66	49	6	7	19	28	28	57	44	49	94	77
Oregon	6	12	10	3	5	1	1	.....	2	.....	7	13	10	5	5
Pennsylvania	1,197	1,231	1,488	1,564	1,275	212	158	680	966	623	1,409	1,389	2,168	2,530	1,898
Rhode Island	10	20	33	20	15	12	12	12	4	6	22	32	45	24	21
South Dakota	6	2	10	12	16	1	.....	.....	19	8	7	2	10	31	24

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Tennessee	83	87	53	85	112	12	12	29	17	79	95	99	82	102	191
Texas	73	131	105	128	159	248	27	59	227	152	321	158	104	365	311
Utah	31	57	26	41	34	10	2	6	18	16	41	39	32	59	50
Vermont	316	337	257	275	229	25	39	175	235	125	341	376	432	510	354
Virginia	60	91	100	82	114	35	24	82	16	17	104	115	182	98	131
Washington	133	126	24	41	39	14	6	11	13	10	147	132	35	54	49
West Virginia	61	68	112	131	123	14	13	35	35	34	75	81	147	186	157
Wisconsin	139	121	130	204	126	15	24	144	143	159	154	145	274	347	235
Wyoming	7	4	1	.....	3	.....	1	.....	.....	.....	7	5	1	.....	3
Not segregated	74	55	29	31	41	5	9	11	9	11	79	64	40	40	52
Total	6,217	6,448	5,760	6,369	6,029	1,622	1,388	3,439	4,848	4,436	7,739	7,836	9,199	11,217	10,465

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TABLE 43.—*Fatalities and injuries per 1,000 300-day workers employed, by States, during the years ended December 31, 1913, 1914, and 1919–1921.*

State.	Number killed per 1,000 300-day workers.					Number injured per 1,000 300-day workers.				
	1913	1914	1919	1920	1921	1913	1914	1919	1920	1921
Alabama	1.26	1.79	0.57	.....	0.68	75.47	69.64	91.90	199.77	254.62
Arizona	10.10	.....	.....	.....	.....	50.51	57.97	39.74	141.18	7.30
Arkansas	.....	.....	4.48	3.29	6.99	30.30	85.11	94.17	29.61	34.97
California	6.19	2.52	2.99	5.04	3.35	83.12	160.74	185.63	208.07	187.40
Colorado	1.19	.....	1.63	2.32	4.99	303.68	59.61	86.46	82.27	157.11
Connecticut	1.60	3.21	.....	3.72	2.28	49.63	130.62	220.49	180.63	219.18
Florida	.....	.....	6.06	.....	.....	.....	11.07	.....	33.33	11.43
Georgia	.57	.72	.71	.62	1.17	28.41	39.48	45.00	30.21	50.29
Idaho	.....	.....	.....	.....	8.20	122.09	122.81	152.78	166.67	163.93
Illinois	2.30	3.85	3.66	1.76	2.00	148.23	197.23	176.10	175.90	204.33
Indiana	1.16	1.69	.35	2.14	2.12	100.93	152.73	160.28	139.57	157.06
Iowa	.84	1.48	2.01	2.01	1.98	89.84	132.05	120.48	76.38	186.51
Kansas	1.53	5.19	1.13	1.43	.....	76.45	166.23	364.97	141.97	225.41
Kentucky	2.70	2.95	2.34	7.70	4.71	77.70	70.01	99.65	152.76	172.94
Maine	1.53	2.24	1.78	.67	.....	13.22	28.38	72.73	116.58	97.14
Maryland	1.05	5.36	4.72	2.47	2.49	51.89	88.75	211.92	206.83	167.36
Massachusetts	1.44	1.70	4.27	.93	1.71	119.25	199.23	161.44	176.53	176.62
Michigan	3.36	5.34	3.64	2.81	5.15	176.31	215.87	221.09	262.77	364.24
Minnesota	1.15	4.73	1.08	2.57	.....	93.93	128.67	201.52	151.41	241.70
Missouri	1.60	1.97	.45	1.28	.....	38.83	73.94	193.87	155.43	160.23
Montana	6.41	.....	.....	.....	.....	89.74	80.81	121.74	92.59	194.44
Nebraska	.....	3.31	.....	4.72	.....	13.02	29.80	102.70	117.92	66.67
New Hampshire	1.38	.....	.....	1.07	2.00	61.98	53.44	93.70	87.89	194.39
New Jersey	.38	4.09	2.19	3.07	1.33	116.30	131.53	164.84	135.75	237.49
New Mexico	14.29	18.02	.....	.....	.....	14.29	909.91	57.97	102.36	165.35
New York	1.70	3.27	1.24	1.77	2.00	92.43	134.97	160.43	145.30	274.22
North Carolina	1.27	2.96	.93	.....	6.98	55.98	160.00	50.23	36.08	57.26
Ohio	1.85	1.19	2.15	1.66	2.84	83.08	136.00	162.10	150.34	203.35
Oklahoma	2.48	.....	1.50	5.63	1.17	41.44	149.66	73.46	66.15	90.16
Oregon	.....	.....	.....	.....	.....	78.65	104.00	71.94	53.76	73.53
Pennsylvania	2.23	2.07	1.67	3.03	1.47	74.97	92.96	151.05	156.35	174.45
Rhode Island	2.42	4.11	.....	.....	.....	26.63	65.71	89.64	46.07	76.92
South Dakota	.....	.....	.....	.....	26.55	33.65	17.39	90.09	196.20	212.39

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Tennessee	2.37	1.19	.75	4.88	3.33	44.96	58.93	61.42	82.99	127.16
Texas	1.04	3.70	8.09	3.32	1.24	335.42	195.06	132.69	201.77	192.45
Utah	3.18				6.01	30.57	121.50	159.20	166.20	150.15
Vermont	3.65	2.65	.96	.87	2.10	88.87	110.88	104.07	111.23	106.02
Virginia	3.16	4.20	1.60	2.79	1.49	46.91	60.37	97.22	54.69	97.33
Washington	5.10	7.00	6.21		3.17	150.00	132.00	108.70	119.73	155.56
West Virginia	.88	9.63	3.02	2.05	2.20	32.95	111.42	110.86	85.00	172.72
Wisconsin	3.80	3.76	1.06	1.99	.61	73.16	77.96	144.67	230.11	174.74
Wyoming				12.05		71.43	83.33	14.71		33.33
Not segregated		2.16	7.46		3.21	75.53	137.93	149.25	169.49	166.67
Total	2.10	2.64	1.93	2.31	2.00	88.81	114.92	144.20	145.51	174.54

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STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS.

AUGUST 1, 1922.

ALABAMA.

Name.	Designation.	Address.
Charles H. Nesbitt	Chief mine inspector	421–423 Chamber of Commerce, Birmingham.
E. E. Echols	Assistant mine inspector, district No. 1	Tuscaloosa.
George Park	Assistant mine inspector, district No. 2	Blossburg.
Jas. B. Carlin	Assistant mine inspector, district No. 3	Birmingham.
S. M. Thompson	Assistant mine inspector, district No. 4	Helena.
	Assistant mine inspector, district No. 5	
W. W. Kicker	Assistant mine inspector, district No. 6	Ensley.
Eugene A. Smith	State geologist	University of Alabama, University.

ALASKA.

B. D. Stewart	Supervising mining engineer, U. S. Bureau of Mines.	Anchorage.

ARIZONA.

G. M. Butler	Director, State bureau of mines	Tucson.
J. F. White	State mine inspector	Phoenix.
E. F. Myers	Deputy mine inspector	Bisbee.
J. F. McManis	do	Globe.
Mathew Hall	do	Prescott.

ARKANSAS.

James G. Ferguson	Commissioner of mines, manufactures, and agriculture.	Little Rock.
Jesse Redyard	State mine inspector	413–414 First National Bank Bldg., Fort Smith.
Gilbert H. Cady	State geologist	University of Arkansas, Fayetteville.

CALIFORNIA.

Will J. French	Chairman, industrial accident commission	525 Market St., San Francisco.
W. P. Ratliff	Chief statistician	Do.
H. M. Wolfin	Superintendent of safety	Do.
G. Chester Brown	Chief mining engineer	Do.
J. Wesley Gebb	Mining engineer	Do.
F. L. Lowell	do	Do.
Fletcher Hamilton	State mineralogist	Ferry Bldg., San Francisco.

COLORADO.

Joseph C. Bell	Chairman, industrial commission	State Capitol, Denver.
Metal mines.		
Horace F. Lunt	Commissioner, bureau of mines, State of Colorado.	Do.
T. R. Henahen	Inspector, district No. 1	Do.
M. J. McCarthy	Inspector, district No. 2	Cripple Creek.
R. J. Murray	Inspector, district No. 3	Salida.
Robert Innes	Inspector, district No. 4	Montrose.
Coal mines.		
James Dalrymple	Chief inspector of coal mines	State Capitol, Denver.
Henry King	Deputy inspector	Do.
James W. Graham	do	Lafayette.
W. H. James	do	Walsenberg.
W. M. Laurie	do	Trinidad.
Hugo H. Machin	do	Aguilar.
Russell D. George	State geologist	University of Colorado, Boulder.

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CONNECTICUT.

Name.	Designation.	Address.
Frederic M. Williams	Chairman, board of compensation commissioners.	Room 4, county courthouse, Waterbury.
Henry H. Robinson	Superintendent, State geological and natural history survey.	Yale University, New Haven.

DELAWARE.

Volley M. Murray	President, industrial accident board	Ford Bldg., Wilmington.

FLORIDA.

Herman Gunter	State geologist, Florida State Geological Survey.	Tallahassee.

GEORGIA.

H. M. Stanley	Chairman, industrial commission	Atlanta.
S. W. McCallie	State geologist, Geological Survey of Georgia	Do.

IDAHO.

George H. Fisher	Chairman, industrial accident board	Boise.
Francis A. Thomson	Secretary, bureau of mines and geology	Moscow.
Stewart Campbell	State mine inspector, mining department	Boise.

ILLINOIS.

Ernest E. Withall	Chairman, industrial commission	303-318 City Hall Square Bldg., Chicago.
Robt. M. Medill	Director, department of mines and minerals	Springfield.
Martin Bolt	Assistant director	1600 South College St., Springfield.
William Hutton	Member, State mining board	Duquoin.
Peter Joyce	do	Springfield.
M. S. Coleman	do	Harrisburg.
James Needham	do	Chicago.
William Hall	President, miners' examining board	Springfield.
William Hogan	Member, miners' examining board	Zeigler.
John Mulligan	Secretary, miners' examining board	Decatur.
Joseph C. Viano	Member, miners' examining board	Coal City.
Richard Neeson	Mine inspector	Illinois Hotel, Springfield.
Walter A. Waite	Mine inspector, district No. 1	422 East Erie St., Springvalley.
William E. Kidd	Mine inspector, district No. 2	603 Columbia Terrace, Peoria.
Thomas P. Back	Mine inspector, district No. 3	321 West Locust St., Canton.
Francis J. Devlin	Mine inspector, district No. 4	142 North Eleventh St., Springfield.
Joseph Haskins	Mine inspector, district No. 5	Catlin.
John G. Millhouse	Mine inspector, district No. 6	Box 254, Litchfield.
Henry D. Thompson	Mine inspector, district No. 7	Collinsville.
Jas. R. Richards	Mine inspector, district No. 8	214 North Twelfth St., Belleville.
Frank Rosbottom	Mine inspector, district No. 9	Duquoin.
E. J. Hoey	Mine inspector, district No. 10	Christopher.
Thos. English	Mine inspector, district No. 11	Harrisburg.
W. L. Morgan	Mine inspector, district No. 12	Greenville.
James E. Anderson	Special mining investigator	538 East Fulton St., Farmington.
Frank W. DeWolf	Chief, State geological survey	Urbana.

INDIANA.

Samuel R. Artman	Chairman, Industrial Board of Indiana	Room 432, State Capitol, Indianapolis.
Cairy Littlejohn	Chief mine inspector	Room 413, State Capitol, Indianapolis.

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INDIANA—Continued.

Name.	Designation.	Address.
John Ellison	Deputy mine inspector	Winslow.
Albert C. Dally	....do	Knightsville.
Samuel J. Wilton	....do	Carbon.
John Stevely	....do	Clinton.
Thos. Gillespie	....do	Bicknell.
W. N. Logan	State geologist, department of geology and natural resources	Indianapolis.

IOWA.

A. B. Funk	Industrial commissioner, workmen's compensation service	Statehouse, Des Moines.
E. M. Gray	President, Iowa State Mining Board	Des Moines.
W. E. Holland	Inspector, district No. 1	Albia.
R. T. Rhys	Inspector, district No. 2	Ottumwa.
Edward Sweeney	Inspector, district No. 3	Des Moines.
George F. Kay	Director, Iowa Geological Survey	Iowa City.

KANSAS.

James Sherwood	State mine inspector	Pittsburg.
William Glennon	Deputy State mine inspector	Do.
John Gilday	....do	Frontenac.
Peter H. White	....do	Daisy Hill.
Matt Dunn	....do	Burlingame.
Mine-rescue department.		
James Sherwood	Ex-officio superintendent, rescue stations	Pittsburg.
George Farrimond	Superintendent, central rescue station	Do.
William Hislop	Superintendent, Arma rescue station	Arma.
D. M. Wilcox	Superintendent, Scammon rescue station	Scammon.
Raymond C. Moore	State geologist	University of Kansas, Lawrence.

KENTUCKY.

Clyde R. Levi	Chairman, workmen's compensation board	Frankfort.
L. Blenkinsopp	Chief inspector of mines	Lexington.
William Roberts	Assistant inspector of mines, District No. 1	Madisonville.
W. H. Hunt	Assistant inspector of mines, District No. 2	Central City.
Joseph A. Lewis	Assistant inspector of mines, District No. 3	Lexington.
R. D. Collett	Assistant inspector of mines, District No. 4	Pineville.
Lacey Laxton	Assistant inspector of mines, District No. 5	Harlan.
H. C. Faulkner	Assistant inspector of mines, District No. 6	Hazard.
M. L. Wells	Assistant inspector of mines, District No. 7	Paintsville.
Grant Phillips	Assistant inspector of mines, District No. 8	Pikeville.
W. R. Jillson	State geologost and director, Kentucky geological survey.	Frankfort.

MAINE.

Arthur L. Thayer	Chairman, industrial accident commission	Augusta.

MARYLAND.

Robert E. Lee	Chairman, State industrial accident commission.	741 Equitable Bldg., Baltimore.
Frank T. Powers	State mine inspector	Frostburg.
Edward B. Mathews	State geologist, Maryland Geological Survey	Johns Hopkins University, Baltimore.

MASSACHUSETTS.

William W. Kennard	Chairman, industrial accident board	Room 272, Statehouse, Boston.

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MICHIGAN.

Name.	Designation.	Address.
Carl Young	Commissioner, department of labor and industry.	Lansing.
John Harris	Coal-mine inspector	1212 Holland Ave., Saginaw.
Michael Collins	Mine inspector for Gogebic County	Ironwood.
John Lien	Deputy mine inspector for Gogebic County	Do.
Nick Drogula	....do.	Do.
John Brinkman	Mine inspector for Keweenaw County	Ahmeek.
Gust. Keikkala	Deputy mine inspector for Keweenaw County	Mohawk.
Alfred James	Mine inspector for Houghton County	Laurium.
Harry J. King	Deputy mine inspector for Houghton County	Do.
Frank Comienski	Mine inspector for Iron County	Stambaugh.
James H. Yelland	Mine inspector for Marquette County	Ishpeming.
Frank L. Larson	Mine inspector for Dickinson County	Iron Mountain.
Robt. Eva, sr	Mine inspector for Ontanagon County	Greenland.
John P. Christopher	Mine inspector for Baraga County	Michigamme.
Richard A. Smith	State geologist	Lansing.

MINNESOTA.

F. A. Duxbury	Chairman, Minnesota Industrial Commission	612 Bremer Arcade, St. Paul.
Frank E. Hoffman	Chief, division of workmen's compensation	Do.
Ed. Smith	Mine inspector for St. Louis County	Eveleth.
W. J. Trescott	Mine inspector for Itasca County	Coleraine.
August Swanson	Mine inspector for Crow Wing County	Brainerd.
F. A. Wildes	Superintendent of State mines	1748 Hague Ave., St. Paul.

MISSISSIPPI.

E. N. Lowe	Director, Mississippi Geological Survey	Jackson.

MISSOURI.

J. E. Roberts	Chief mine inspector	Kirksville.
W. H. Castle	Deputy inspector	Fulton.
F. G. Fenix	....do.	Joplin.
Tolbert Henson	....do.	Perryville.
Evert Richardson	....do.	Granby.
W. H. Crouch	Secretary, State bureau of mines	Bethany.
H. A. Buehler	State geologist	Rolla.

MONTANA.

Jerome G. Locke	Chairman, State industrial board	Helena.
George N. Griffin	State coal-mine inspector	Do.
William Maxwell	State metal-mine inspector	Do.
J. P. Rowe	State geologist	University of Montana, Missoula.

NEBRASKA.

Frank A. Kennedy	Secretary of labor and compensation commissioner.	State Capitol, Lincoln.
E. H. Barbour	State geologist	University of Nebraska, Lincoln.

NEVADA.

George D. Smith	Chairman, Nevada industrial commission	Carson City.
A. J. Stinson	State mine inspector	Do.
Charles Huber	Deputy mine inspector	Tonopah.
Alex. Baird	....do.	Ely.

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NEW JERSEY.

Name.	Designation.	Address.
John Roach	Deputy commissioner of labor, department of labor.	State House, Trenton.
Augustus Munson	State mine inspector	P. O. Box 311, Dover.
H. B. Kummel	State geologist	Trenton.

NEW MEXICO.

W. W. Risdon	State inspector of mines	709 West Roma Ave., Albuquerque.
R. W. Ellis	State geologist	Do.

NEW YORK.

Henry D. Sayer	State industrial commissioner	124 East 28th St., New York.
James L. Gernon	Director of inspections	Do.
E. B. Patton	Chief statistician, State industrial commission	Albany.
W. W. Jones	Mine inspector, State industrial commission	Do.
Robert W. Jones	Inspector of mines and tunnels, State industrial commission.	124 East 28th St., New York.
Gustav Werner	Tunnel inspector, State industrial commission	Do.
John M. Clarke	State geologist	University of the State of New York, Albany.

NORTH CAROLINA.

M. L. Shipman	Commissioner of labor and printing	Raleigh.
Joseph Hyde Pratt	State geologist	Chapel Hill.

NORTH DAKOTA.

Joseph A. Kitchen	Chairman, workmen's compensation bureau	Bismarck.
A. G. Leonard	State geologist	University.
John Hanwell	State mine inspector	P. O. box 271, Bismarck.

OHIO.

T. J. Duffy	Chairman, industrial commission	Columbus.
Percy Tetlow	Director, department of industrial relations	Do.
Wm. Robinett	Chief, division of mines	Do.
Dan C. Jones	Deputy inspector, district No. 1	Coalton.
Jas. Dugan	Deputy inspector, district No. 2	Logan.
Andrew Ginnan	Deputy inspector, district No. 3	Jacksonville.
Elmer Sagle	Deputy inspector, district No. 4	Roseville.
E. W. Smith	Deputy inspector, district No. 5	Byesville.
Stephen Williams	Deputy inspector, district No. 6	Uhrichsville.
Geo. H. Foster	Deputy inspector, district No. 7	Massillon.
Lot H. Jenkins	Deputy inspector, district No. 8	Martins Ferry.
Frank P. Corey	Deputy inspector, district No. 9	Flushing.
T. P. Williams	Deputy inspector, district No. 10	Belmont.
Andrew Mullen	Deputy inspector, district No. 11	Adena.
Thos. G. Reese	Deputy inspector, district No. 12	Salem.
Val E. Brown	Deputy inspector, district No. 13	Pomeroy.
Isaac Vaughn	Deputy inspector, district No. 14	Nelsonville.
J. F. Davis	Deputy inspector, district No. 15	Shawnee.
James Forgie	Deputy inspector, district No. 16	Lore City.
Edw. A. Evans	Deputy inspector, district No. 17	New Philadelphia.
P. W. Moore	Rescue car attendant	Columbus.
J. C. Wilson	Oil and gas well inspector	Do.
J. A. Bownocker	State geologist	Geological Survey of Ohio, Columbus.

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OKLAHOMA.

Name.	Designation.	Address.
Baxter Taylor	Chairman, industrial commission	State Capitol, Oklahoma City.
Ed. Boyle	Chief mine inspector (mines, oil and gas)	McAlester.
John O'Brien	Assistant mine inspector, district No. 1	Lehigh.
William Ogilvie	Assistant mine inspector, district No. 2	McAlester.
Miller D. Hay	Assistant mine inspector, district No. 3	East Broadway Apartments, Muskogee.
C. W. Shannon	Director, Oklahoma Geological Survey	Norman.

OREGON.

J. W. Ferguson	Chairman, State industrial accident commission	Salem.
Henry M. Parks	Director, Oregon bureau of mines and geology	417 Oregon Bldg., Portland.

PENNSYLVANIA.

Clifford B. Connelley	Chairman, industrial board	Keystone Bldg., Harrisburg.
Harry A. Mackey	Chairman, workmen's compensation board	Do.
Joseph J. Walsh	Chief, department of mines	Do.
Frank Hall	Deputy, department of mines	Do.
Edward C. Malick	Chief clerk, department of mines	Do.
Anthracite inspectors.		
.....	Mine inspector, first district	.....
P. J. Moore	Mine inspector, second district	Carbondale.
L. M. Evans	Mine inspector, third district	Scranton.
Jenkin T. Reese	Mine inspector, fourth district	Do.
S. J. Phillips	Mine inspector, fifth district	Do.
David T. Williams	Mine inspector, sixth district	Do.
Augustus McDade	Mine inspector, seventh district	263 North Main St., Taylor.
Robert Johnson	Mine inspector, eighth district	Pittston.
Edwin C. Curtis	Mine inspector, ninth district	Kingston.
John B. Corgan	Mine inspector, tenth district	Do.
T. J. Williams	Mine inspector, eleventh district	Do.
D. T. Davis	Mine inspector, twelfth district	Wilkes-Barre.
Frank Kettle	Mine inspector, thirteenth district	Do.
.....	Mine inspector, fourteenth district	.....
David J. Roderick	Mine inspector, fifteenth district	Hazleton.
J. J. Stickler	Mine inspector, sixteenth district	Do.
Isaac M. Davies	Mine inspector, seventeenth district	Lansford.
E. G. Evans	Mine inspector, eighteenth district	Coaldale.
M. J. Brennan	Mine inspector, nineteenth district	Pottsville.
P. C. Fenton	Mine inspector, twentieth district	Mahanoy City.
A. B. Lamb	Mine inspector, twenty-first district	Shenandoah.
William Reid	Mine inspector, twenty-second district	Centralia.
B. I. Evans	Mine inspector, twenty-third district	Mount Carmel.
P. J. Friel	Mine inspector, twenty-fourth district	Shamokin.
Charles J. Price	Mine inspector, twenty-fifth district	Lykens.
Bituminous inspectors.		
Alexander McCanch	Mine inspector, first district	Monongahela.
C. B. Ross	Mine inspector, second district	Latrobe.
James D. Walker	Mine inspector, third district	Butler.
William Langan	Mine inspector, fourth district	Dubois.
Richard Maize	Mine inspector, fifth district	Uniontown.
Thomas D. Williams	Mine inspector, sixth district	Johnstown.
Charles P. McGregor	Mine inspector, seventh district	Crafton.
Joseph Knapper	Mine inspector, eighth district	Philipsburg.
Silas S. Hall	Mine inspector, ninth district	Connellsville.
Joseph Williams	Mine inspector, tenth district	Altoona.
J. J. McDonald	Mine inspector, eleventh district	Greensburg.
T. J. Lewis	Mine inspector, twelfth district	Punxsutawney.
J. I. Thomas	Mine inspector, thirteenth district	Johnstown.
David Young	Mine inspector, fourteenth district	Freeport.
W. B. Wardrop	Mine inspector, fifteenth district	Barnesboro.
W. H. Howarth	Mine inspector, sixteenth district	Brownsville.
John I. Pratt	Mine inspector, seventeenth district	5494 Hays St., Pittsburgh.
Thomas A. Mather	Mine inspector, eighteenth district	Tyrone.
James J. Stoker	Mine inspector, nineteenth district	Irwin.
F. W. Cunningham	Mine inspector, twentieth district	Somerset.
C. P. Bryne	Mine inspector, twenty-first district	Charleroi.
John F. Bell	Mine inspector, twenty-second district	Dravosburg.
Edward E. Girod	Mine inspector, twenty-third district	Masontown.
Nicholas Evans	Mine inspector, twenty-fourth district	Johnstown.
Thomas S. Lowther	Mine inspector, twenty-fifth district	Indiana.

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PENNSYLVANIA—Continued.

Name.	Designation.	Address.
Bituminous inspectors—Continued.		
P. J. Callaghan	Mine inspector, twenty-sixth district	Bridgeville.
Harry Phython	Mine inspector, twenty-seventh istrict	Belle Vernon.
Thomas H. Thompson	Mine inspector, twenty-eighth district	Kittanning.
Patrick S. King	Mine inspector, twenty-ninth district	612 North Canal St., Pittsburgh.
C. H. Croker	Mine inspector, thirtieth district	Johnstown.
George H. Ashley	State geologist, topographic and geological survey	Harrisburg.

SOUTH DAKOTA.

Otto Ellerman	State mine inspector	Lead.
Freeman Ward	State geologist, State geological and natural history survey.	Vermilion.

TENNESSEE.

E. N. Rogers	Insurance commissioner	Nashville.
George N. Taylor	Compensation inspector	Do.
O. P. Pile	Chief mine inspector	Do.
W. H. Elliott	District mine inspector, eastern division	Rockwood.
A. J. Holden	District mine inspector, middle division	Dayton.
George B. Thom	District mine inspector, western division	Decherd.
Wilbur A. Nelson	State geologist, Tennessee State Geological Survey.	Nashville.

TEXAS.

J. H. Fowler	Chairman, industrial accident board	Austin.
Bruce S. Gentry	State mine inspector	P. O. Box 327, Rockdale.
J. A. Udden	Director, bureau of economic geology and technology.	Austin.

UTAH.

P. A. Thatcher	Chairman, industrial commission	State Capitol, Salt Lake City.
C. A. Allen	Chief mine inspector for the commission	Do.
John Crawford	Coal mine inspector for the commission	Do.
H. G. Snyder	Metal mine inspector for the commission	Do.
Wm. G. Peterson	State geologist	Agricultural College of Utah, Logan.

VERMONT.

John S. Buttles	Commissioner of industries	Montpelier.
Geo. H. Perkins	State geologist, University of Vermont	Burlington.

VIRGINIA.

John Hopkins Hall, jr.	Commissioner, bureau of labor and industrial statistics.	Richmond.
C. A. McHugh	Chairman, industrial commission	Do.
A. G. Lucas	State inspector of mines, bureau of labor and industrial statistics.	Do.
Thomas L. Watson	Director and State geologist, Virginia Geological Survey.	Charlottesville.

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WASHINGTON.

Name.	Designation.	Address.
Edward Clifford	Chairman, industrial welfare committee, Department of labor and industries.	Olympia.
Wm. R. Reese	Chief mine inspector	421 Perkins Bldg., Tacoma.
Geo. T. Wake	Deputy mine inspector	Do.
Solon Shedd	Supervisor of geology	Pullman.

WEST VIRGINIA.

Lee Ott	Commissioner, State compensation commission	Charleston.
R. M. Lambie	Chief, department of mines	Do.
C. W. Stuart	Mine inspector, district No. 1	Thomas.
W. H. Sandridge	Mine inspector, district No. 2	Grafton.
Evan L. Griffiths	Mine inspector, district No. 3	Clarksburg.
William Moore	Mine inspector, district No. 4	Morgantown.
W. B. Riggleman	Mine inspector, district No. 5	Fairmont.
A. E. Lafferty	Mine inspector, district No. 6	Moundsville.
Thomas Jarrett	Mine inspector, district No. 7	Weston.
V. E. Sullivan	Mine inspector, district No. 8	Charleston.
Eli J. Mason	Mine inspector, district No. 9	Do.
Zach Evans	Mine inspector, district No. 10	Handley.
John E. Hamilton	Mine inspector, district No. 11	Eskdale.
J. A. Porter	Mine inspector, district No. 12	Gauley Bridge.
Harry Fryer	Mine inspector, district No. 13	Prince.
Robert Lilly	Mine inspector, district No. 14	Mount Hope.
W. L. McGinnis	Mine inspector, district No. 15	Beckley.
Wm. Gantz	Mine inspector, district No. 16	Mullens.
Thomas Stockdale	Mine inspector, district No. 17	Freeman.
W. D. Lee	Mine inspector, district No. 18	Maitland.
Wm. E. Prentice	Mine inspector, district No. 19	Iaeger.
S. T. Lambert	Mine inspector, district No. 20	Matewan.
J. F. White	Mine inspector, district No. 21	Logan.
C. E. Foster	Mine inspector, district No. 22	St. Albans.
C. H. Hetzel, jr	Director of mine rescue stations	Charleston.
J. D. McCune	Inspector of sand mines, etc	Martinsburg.
I. C. White	State geologist, West Virginia Geological Survey	Morgantown.

WISCONSIN.

Fred M. Wilcox	Chairman, industrial commission	Madison.
R. McA. Keown	Engineer, industrial commission	Do.
Arthur H. Findeisen	Mine inspector, industrial commission	Do.
W. O. Hotchkiss	Director, geological and natural history survey	Do.

WYOMING.

A. D. Hoskins	State treasurer, workmen's compensation department.	Cheyenne.
Arthur Calverley	Assistant deputy and department manager	Do.
R. T. Sneddon	Coal mine inspector, district No. 1	Diamondville.
R. V. Hotchkiss	Coal mine inspector, district No. 2	Sheridan.
G. B. Morgan	State geologist, Geological Survey of Wyoming	Cheyenne.

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Bulletin 196. Coal-mine fatalities in the United States, 1919, and coal-mine statistics supplementing those published in Bulletin 115, with a list of permissible explosives, lamps, and motor tests prior to January 31, 1920, by A. H. Fay. 1920. 86 pp.

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